

UPOV

TG/CUCUR\_MMO(proj.1)

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## INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

***Cucurbita maxima* X *Cucurbita moschata*  
INTERSPECIFIC HYBRID**

UPOV Code: CUCUR\_MMO

*Cucurbita maxima* Duch. x *Cucurbita moschata* Duch.

## GUIDELINES

## FOR THE CONDUCT OF TESTS

## FOR DISTINCTNESS, UNIFORMITY AND STABILITY

*prepared by experts from France**to be considered by the**Technical Working Party for Vegetables**at its forty-seventh session, to be held in Nagasaki, Japan, from May 20 to 24, 2013*

Alternative Names:\*

| Botanical name   | English   | French   | German | Spanish |
|--|---|--|--------|---------|
| <i>Cucurbita maxima</i><br>Duch. x <i>Cucurbita</i><br><i>moschata</i> Duch. | Interspecific hybrids -<br><i>Cucurbita maxima</i> x<br><i>Cucurbita moschata</i> | Hybrides<br>interspécifiques -<br><i>Cucurbita maxima</i> x<br><i>Cucurbita moschata</i> |        |         |

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

## ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

Other associated UPOV documents:

**TG/155/4 Rev.:** *Cucurbita maxima* Duch., (2007-03-28 + 2009-04-01)

**TG/234/1:** *Cucurbita moschata* Duch. (2007-03-28)

\* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website ([www.upov.int](http://www.upov.int)), for the latest information.]

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## 1. Subject of these Test Guidelines

1.1 These Test Guidelines apply to all varieties of **interspecific hybrids** of *Cucurbita maxima* (Duch) x *Cucurbita moschata* (Duch). Such varieties can be used as rootstocks for *Cucurbitaceae* varieties.

1.2 The parent lines of these hybrids are not the subject of this guideline, but they have to refer to the appropriate guideline TG/155/4 Rev.: *Cucurbita maxima* Duch., or TG/234/1: *Cucurbita moschata* Duch..

## 2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of **seeds**.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

**200g – 1,500 seeds.**

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should, be stated by the applicant.”

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

## 3. Method of Examination

### 3.1 *Number of Growing Cycles*

The minimum duration of tests should normally be two independent growing cycles.

### 3.2 *Testing Place*

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 “Examining Distinctness”.

### 3.3 *Conditions for Conducting the Examination*

3.3.1 The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.3.2 The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column of the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.

### 3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 20 plants, which should be divided between at least 2 replicates.

3.4.2 When resistances characteristics are used for assessing distinctness, uniformity and stability, records must be taken under conditions of controlled infection and, unless otherwise specified, on at least 20 plants.

3.4.3 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

### 3.5 *Additional Tests*

Additional tests, for examining relevant characteristics, may be established.

## 4. Assessment of Distinctness, Uniformity and Stability

### 4.1 *Distinctness*

#### 4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

Further guidance is provided in documents TGP/9 “Examining Distinctness” and TGP/8 “Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability”.

#### 4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

#### 4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

#### 4.1.4 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 10 plants or parts taken from each of 10 plants and any other observations made on all plants in the test, disregarding any off-type plants.

#### 4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the second column of the Table of Characteristics (see document TGP/9 “Examining Distinctness”, Section 4 “Observation of characteristics”):

- MG: single measurement of a group of plants or parts of plants
- MS: measurement of a number of individual plants or parts of plants
- VG: visual assessment by a single observation of a group of plants or parts of plants
- VS: visual assessment by observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

“Visual” observation (V) is an observation made on the basis of the expert’s judgment. For the purposes of this document, “visual” observation refers to the sensory observations of the experts

and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

## 4.2 Uniformity

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

### (a) Hybrid varieties

4.2.2 The assessment of uniformity for hybrid varieties depends on the type of hybrid and should be according to the recommendations for hybrid varieties in the General Introduction.

### (b) Uniformity assessment by off-types (all characteristics observed on the same sample size)

4.2.3 For the assessment of uniformity a population standard of 1 % for hybrid varieties with an acceptance probability of at least 95 % should be applied. In the case of a sample size of 20 plants, the maximum number of off-types allowed would be 1 off-type.

In addition, for single cross hybrids, a population standard of 3% and an acceptance probability of at least 95% should be applied for inbred plants obviously resulting from the selfing of a parent line. In the case of a sample size of 20 plants, 2 inbred plants are allowed.

## 4.3 Stability

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be further examined by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

## 5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful **grouping characteristics:**

- (a) \*\*\*\* to select
- (b) \*\*\*\*
- (c) \*\*\*\*
- (d) \*\*\*\*

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 "Examining Distinctness".

## 6. Introduction to the Table of Characteristics

### 6.1 *Categories of Characteristics*

#### 6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

#### 6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by \*) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

### 6.2 *States of Expression and Corresponding Notes*

6.2.1 States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.2.2 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

| State  | Note |
|--------|------|
| small  | 3    |
| medium | 5    |
| large  | 7    |

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

| State               | Note |
|---------------------|------|
| very small          | 1    |
| very small to small | 2    |
| small               | 3    |
| small to medium     | 4    |
| medium              | 5    |
| medium to large     | 6    |
| large               | 7    |
| large to very large | 8    |
| very large          | 9    |

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 "Development of Test Guidelines".

### 6.3 *Types of Expression*

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

### 6.4 *Example Varieties*

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

### 6.5 *Legend*

- (\*) Asterisked characteristic – see Chapter 6.1.2
- QL Qualitative characteristic – see Chapter 6.3
- QN Quantitative characteristic – see Chapter 6.3
- PQ Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS – see Chapter 4.1.5

(a)-(c) See Explanations on the Table of Characteristics in Chapter 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8.2.

7. Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres

|           | English        | français  | Deutsch   | español           | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|-----------|----------------|---|---|-------------------|--|---------------|
| <b>1.</b> | <b>VG/ MS</b>  | <b>Seedling: shape of cotyledons</b>                      | <b>Plantule : forme des cotyledons</b>                            |                   |  |               |
| <b>PQ</b> | elliptic       |   |   |                   | Kazako   | 1             |
|           | broad elliptic |   |   |                   | Azman, Strong Tosa   | 2             |
|           | obovate        |   |   |                   |  | 3             |
| <b>2.</b> | <b>VG (+)</b>  | <b>Plant: length of main stem</b>                         | <b>Plante: longueur de la tige principale</b>                     |                   |  |               |
| <b>QN</b> | <b>(a)</b>     | very short  | très courte   |                   |  | 1             |
|           |                | short   | courte  |                   |  | 3             |
|           |                | medium  | moyenne   |                   |  | 5             |
|           |                | long  | longue  |                   |  | 7             |
|           |                | very long   | très longue   |                   |  | 9             |
| <b>3.</b> | <b>MS/ VG</b>  | <b>Leaf blade: size</b>                                   | <b>Limbe : taille</b>   |                   |  |               |
| <b>QN</b> | <b>(a)</b>     | small   | petite  |                   | Kazako   | 3             |
|           |                | medium  | moyenne   |                   | Strong Tosa  | 5             |
|           |                | large   | grande  |                   | Ferro  | 7             |
| <b>4.</b> | <b>VG (+)</b>  | <b>Leaf blade: division</b>                               |   |                   |  |               |
| <b>QN</b> | <b>(a)</b>     | absent or very shallow                                    |   |                   |  | 1             |
|           |                | shallow   |   |                   |  | 2             |
|           |                | moderately or strongly divided                            |   |                   |  | 3             |
| <b>5.</b> | <b>VG</b>      | <b>Leaf blade: intensity of green color of upper side</b> | <b>Limbe: intensité de la couleur verte de la face supérieure</b> |                   |  |               |
| <b>QN</b> | <b>(a)</b>     | light   | faible  |                   |  | 3             |
|           |                | medium  | moyenne   |                   | Kazako   | 5             |
|           |                | dark  | forte   |                   | Azman, Tetsukabuto   | 7             |
| <b>6.</b> | <b>VG</b>      | <b>Leaf blade: silver patches</b>                         | <b>Limbe: taches argentées</b>                                    |                   |  |               |
| <b>QL</b> | <b>(a)</b>     | absent  | absentes  |                   |  | 1             |
|           |                | present   | présentes   |                   |  | 9             |
| <b>7.</b> | <b>VG</b>      | <b>Leaf blade: blistering</b>                             | <b>Limbe : cloûre</b>   | <b>TO DELETE?</b> |  |               |
| <b>QN</b> | <b>(a)</b>     | not or very slightly blistered                            | pas ou très peu cloqué  |                   |  | 1             |
|           |                | slightly blistered  | peu cloqué  |                   |  | 2             |
|           |                | medium or strongly blistered                              | moyennement ou fortement cloquée                                  |                   |  | 3             |



|                |           | English                               | français                         | Deutsch         | español | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|----------------|-----------|---------------------------------------|----------------------------------|-----------------|---------|--|---------------|
| 8.             | VG        | Petiole: length                       | Pétiole: longueur                |                 |         |  |               |
| QN             | (a)       | short                                 | court                            |                 |         |  | 3             |
|                |           | medium                                | moyen                            |                 |         | Azman  | 5             |
|                |           | long                                  | long                             |                 |         | Carnivor   | 7             |
| 9.             | VG        | Petiole: diameter<br>(at base)        | Pétiole: diamètre (à la<br>base) | TO DELETE?      |         |  |               |
| QN             | (a)       | small                                 | petit                            |                 |         | Tetsukabuto  | 3             |
|                |           | medium                                | moyen                            |                 |         | Carnivor   | 5             |
|                |           | large                                 | grand                            |                 |         |  | 7             |
| NEW<br>(ISF-1) | MS/<br>VG | Male flower: diameter<br>of corolla   |                                  | TO BE DISCUSSED |         |  |               |
|                |           | ***.                                  |                                  |                 |         |  |               |
|                |           | small                                 |                                  |                 |         |  | 3             |
| QN             |           | medium                                |                                  |                 |         |  | 5             |
|                |           | large                                 |                                  |                 |         |  | 7             |
| NEW<br>(ISF-2) | MS/<br>VG | Male flower:<br>overlapping of petals |                                  | TO BE DISCUSSED |         |  |               |
|                |           | ***.                                  |                                  |                 |         |  |               |
|                |           | (+)                                   |                                  |                 |         |  |               |
|                |           | free                                  |                                  |                 |         |  | 3             |
| QN             |           | some overlapping                      |                                  |                 |         |  | 5             |
|                |           | all overlapping                       |                                  |                 |         |  | 7             |
| NEW<br>(ISF-3) | MS/<br>VG | Female flower:<br>diameter of corolla |                                  | TO BE DISCUSSED |         |  |               |
|                |           | ***.                                  |                                  |                 |         |  |               |
|                |           | small                                 |                                  |                 |         |  | 3             |
| QN             |           | medium                                |                                  |                 |         |  | 5             |
|                |           | large                                 |                                  |                 |         |  | 7             |
| 10.            | VG        | Peduncle: length                      | Pédoncule: longueur              |                 |         |  |               |
| QN             | (b)       | short                                 | court                            |                 |         |  | 3             |
|                |           | medium                                | moyen                            |                 |         |  | 5             |
|                |           | long                                  | long                             |                 |         |  | 7             |
| NEW<br>(Es-1)  | VG        | Peduncle: diameter                    |                                  | TO BE DISCUSSED |         |  |               |
|                |           | ***.                                  |                                  |                 |         |  |               |
| QN             | (b)       | short                                 |                                  |                 |         |  | 3             |
|                |           | medium                                |                                  |                 |         |  | 5             |
|                |           | long                                  |                                  |                 |         |  | 7             |

|            |                   | English                                     | français  | Deutsch | español | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|------------|-------------------|---|---|---------|---------|--|---------------|
| <b>11.</b> | <b>VG</b>         | <b>Fruit: shape in longitudinal section</b> | <b>Fruit: forme en section longitudinale</b>      |         |         |  |               |
| <b>(+)</b> |                   |   |   |         |         |  |               |
| <b>PQ</b>  | <b>(b)</b>        | oblate                                      | ronde aplatie                                     |         |         | Carnivor, Kublai,<br>Iron Cap, Kazako                                  | 1             |
|            |                   | oblong                                      |   |         |         | Becada   | 2             |
|            |                   | circular                                    | ronde   |         |         | Tetsukabuto, Ferro   | 3             |
|            |                   | ovate                                       |   |         |         | Flexifort  | 4             |
|            |                   | elliptic                                    | elliptique  |         |         |  | 5             |
| <b>12.</b> | <b>MG/<br/>VG</b> | <b>Fruit: length</b>                        | <b>Fruit: longueur</b>                            |         |         |  |               |
| <b>QN</b>  | <b>(b)</b>        | short                                       | court   |         |         | Shintosa   | 3             |
|            |                   | medium                                      | moyen   |         |         | (2012.02)  | 5             |
|            |                   | long  | long  |         |         | Flexifort  | 7             |
| <b>13.</b> | <b>MG/<br/>VG</b> | <b>Fruit: diameter</b>                      | <b>Fruit: diamètre</b>                            |         |         |  |               |
| <b>(+)</b> |                   |   |   |         |         |  |               |
| <b>QN</b>  | <b>(b)</b>        | small                                       | petit   |         |         | Kazako, Shintosa   | 3             |
|            |                   | medium                                      | moyen   |         |         | Flexifort  | 5             |
|            |                   | large                                       | grand   |         |         | Zadok, (2012.02)   | 7             |
| <b>14.</b> | <b>MG/<br/>VG</b> | <b>Fruit: ratio length/diameter</b>         | <b>Fruit: rapport longueur / diamètre maximal</b> |         |         |  |               |
| <b>QN</b>  | <b>(b)</b>        | very small                                  | très petit  |         |         |  | 1             |
|            |                   | small                                       | petit   |         |         |  | 3             |
|            |                   | medium                                      | moyen   |         |         |  | 5             |
|            |                   | large                                       | grand   |         |         |  | 7             |
|            |                   | very large                                  | très grand  |         |         |  | 9             |
| <b>15.</b> | <b>VG</b>         | <b>Fruit: profile at stem end</b>           | <b>Fruit : profil à la base</b>                   |         |         |  |               |
| <b>(+)</b> |                   |   |   |         |         |  |               |
| <b>QN</b>  | <b>(b)</b>        | raised                                      | en relief   |         |         | Flexifort  | 1             |
|            |                   | flat  | plan  |         |         | Azman, Ferro   | 2             |
|            |                   | slightly depressed                          | faiblement en creux                               |         |         |  | 3             |
|            |                   | moderately depressed                        | moyennement en creux                              |         |         |  | 4             |
|            |                   | strongly depressed                          | fortement en creux                                |         |         |  | 5             |
| <b>16.</b> | <b>VG</b>         | <b>Fruit: profile at blossom end</b>        | <b>Fruit : profil au sommet</b>                   |         |         |  |               |
| <b>(+)</b> |                   |   |   |         |         |  |               |
| <b>QN</b>  | <b>(b)</b>        | depressed                                   | déprimé   |         |         | Azman, Kazako,<br>Tetsukabuto  | 1             |
|            |                   | flat  | plan  |         |         | Carnivor, Ferro  | 2             |
|            |                   | raised                                      | protuberant                                       |         |         | Flexifort  | 3             |

|     |     | English                                 | français   | Deutsch | español | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|-----|-----|---|--|---------|---------|--|---------------|
| 17. | VG  | <b>Fruit: grooves</b>                   | <b>Fruit: cannelures</b>                                     |         |         |  |               |
| QL  | (b) | absent                                  | absentes   |         |         |  | 1             |
|     |     | present                                 | presentes  |         |         | Tetsukabuto  | 9             |
| 18. | VG  | <b>Fruit: distance between grooves</b>  | <b>Fruit: distance entre les cannelures</b>                  |         |         |  |               |
| QN  | (b) | small                                   | petite   |         |         | Tetsukabuto, Kasako  | 3             |
|     |     | medium                                  | moyenne  |         |         | Carnivor, Kublai   | 5             |
|     |     | large                                   | grande   |         |         |  | 7             |
| 19. | VG  | <b>Fruit: depth of grooves</b>          | <b>Fruit: profondeur des cannelures</b>                      |         |         |  |               |
| QN  | (b) | shallow                                 | peu profondes  |         |         | Ercole, Carnivor   | 3             |
|     |     | medium                                  | moyennement profondes  |         |         | Kublai, Kazako   | 5             |
|     |     | deep                                    | profondes  |         |         |  | 7             |
| 20. | VG  | <b>Fruit: blistering</b>                | <b>Fruit: cloques</b>  |         |         |  |               |
| QL  | (b) | absent                                  | absentes   |         |         | Kazako   | 1             |
|     |     | present                                 | presentes  |         |         | Azman, Carnivor, Strong Tosa, Zadok,                                   | 9             |
| 21. | VG  | <b>Fruit: intensity of blistering</b>   | <b>Fruit: intensité des cloques</b>                          |         |         |  |               |
| QL  | (b) | weak                                    | faible   |         |         |  | 3             |
|     |     | medium                                  | moyenne  |         |         |  | 5             |
|     |     | strong                                  | forte  |         |         |  | 7             |
| 22. | VG  | <b>Fruit: number of color of skin</b>   | <b>Fruit : nombre de couleur de l'épiderme</b>               |         |         |  |               |
| QL  | (b) | one                                     | une  |         |         | Ferro, Tetsukabuto   | 1             |
|     |     | two                                     | deux   |         |         | Kublai, Strong Tosa  | 2             |
|     |     | more than two                           | plus de deux   |         |         |  | 3             |
| 23. | VG  | <b>Fruit: ground color of skin</b>      | <b>Fruit : couleur de fond de l'épiderme</b>                 |         |         |  |               |
| QL  | (b) | tan                                     | beige  |         |         | Zadok  | 1             |
|     |     | orange                                  | orange   |         |         | Kazako   | 2             |
|     |     | green                                   | vert   |         |         | Tetsukabuto  | 3             |
| 24. | VG  | <b>Fruit: intensity of ground color</b> | <b>Fruit : intensité de la couleur de fond de l'épiderme</b> |         |         |  |               |
| QN  | (b) | very weak                               | très faible  |         |         |  | 1             |
|     |     | weak                                    | faible   |         |         |  | 3             |
|     |     | medium                                  | moyenne  |         |         |  | 5             |
|     |     | strong                                  | forte  |         |         | Carnivor   | 7             |
|     |     | very strong                             | très forte   |         |         | Tetsukabuto  | 9             |

|            |     | English  | français   | Deutsch                | español            | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|------------|-----|--|--|------------------------|--------------------|--|---------------|
| 25.        | VG  | <b>Fruit: speckles</b>                                     | <b>Fruit : tâches</b>  |                        |                    |  |               |
| QL         | (b) | absent   | absent   |                        |                    |  | 1             |
|            |     | present  | present  |                        |                    |  | 9             |
| 26.        | VG  | <b>Only speckled varieties: Fruit: density of speckles</b> | <b>Seulement variétés à fruits tachetées: Fruit : densité des tâches</b> |                        |                    |  |               |
| (+)        |     |  |  |                        |                    |  |               |
| QN         | (b) | weak   | faible   |                        |                    |  | 3             |
|            |     | medium   | moyenne  |                        |                    |  | 5             |
|            |     | strong   | forte  |                        |                    |  | 7             |
| <b>NEW</b> | VG  | <b>Only speckled varieties: size of speckles</b>           |  | <b>TO BE DISCUSSED</b> |                    |  |               |
| (FR-1)     |     |  |  |                        |                    |  |               |
| ***        |     |  |  |                        |                    |  |               |
| (+)        |     |  |  |                        |                    |  |               |
| QN         | (b) | small  |  |                        |                    |  | 3             |
|            |     | medium   |  |                        |                    |  | 5             |
|            |     | large  |  |                        |                    |  | 7             |
| 27.        | VG  | <b>Fruit: main color of flesh</b>                          | <b>Fruit: couleur principale de la chair</b>                             |                        |                    |  |               |
| PQ         | (b) | cream  | crème  |                        | Kazako             |  | 1             |
|            |     | yellow   | jaune  |                        | Tetsukabuto        |  | 2             |
|            |     | orange   | orange   |                        |                    |  | 3             |
|            |     | reddish orange   | orange rouge   |                        |                    |  | 4             |
| 28.        | VG  | <b>Seed: size</b>  | <b>Graine: taille</b>  |                        |                    |  |               |
| QN         | (c) | small  | petite   |                        |                    |  | 3             |
|            |     | medium   | moyenne  |                        | Azman, Strong Tosa |  | 5             |
|            |     | large  | grande   |                        | Ferro              |  | 7             |
| 29.        | VG  | <b>Seed: shape</b>   | <b>Graine : forme</b>  |                        |                    |  |               |
| QN         | (b) | narrow elliptic  | elliptique étroite   |                        |                    |  | 1             |
|            |     | elliptic   | elliptique   |                        |                    |  | 2             |
|            |     | broad elliptic   | elliptique large   |                        |                    |  | 3             |
| 30.        | VG  | <b>Seed: color of coat</b>                                 | <b>Graine: couleur du tégument</b>                                       |                        |                    |  |               |
| PQ         | (c) | white  | blanc  |                        |                    |  | 3             |
|            |     | cream  | crème  |                        |                    |  | 5             |
|            |     | light brown  | marron clair   |                        |                    |  | 7             |

## 8. Explanations on the Table of Characteristics

### 8.1 *Explanations covering several characteristics*

Characteristics containing the following key in the second column of the Table of Characteristics should be examined as indicated below:

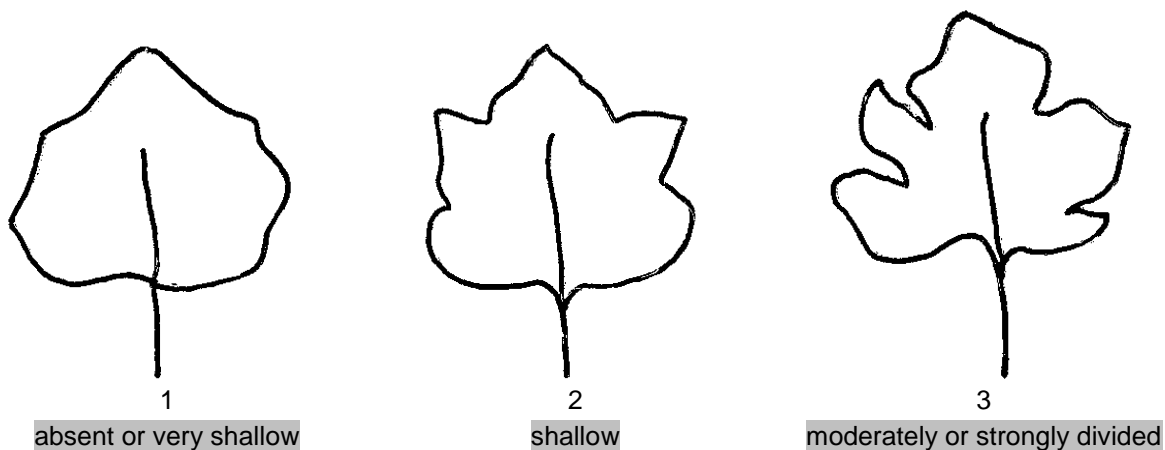
- (a) Observations which should be made on fully developed leaves, ~~when the first fruit is fully developed~~ after the beginning of flowering
- (b) Observations which should be made on fully developed fruit at physiological maturity.
- (c) Observations which should be made on fully developed and dry seed, after washing and drying in the shade.

### 8.2 *Explanations for individual characteristics*

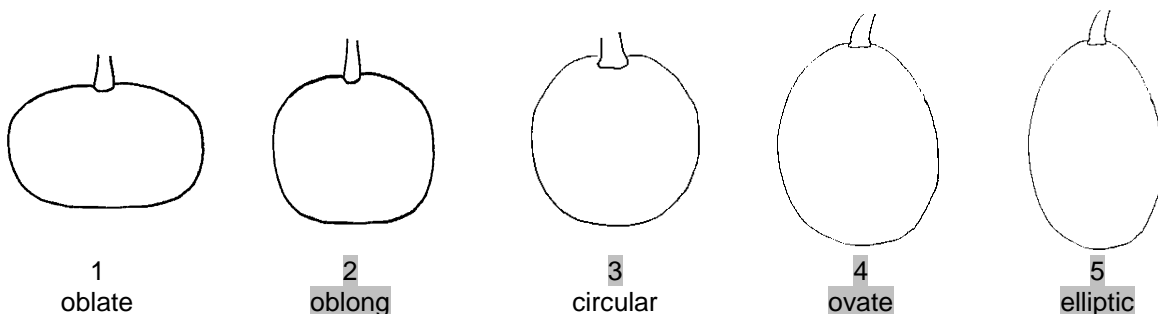
#### Ad. 2: Plant: length of main stem

It is not easy to observe this, because the plant tends to develop many branches. NL colleague suggest looking at the volume of the plant or the surface the plant covers in the field, just before the plants of the variety which grows fastest, start to 'touch' each other in the field.

#### Ad. 4: Leaf blade: division



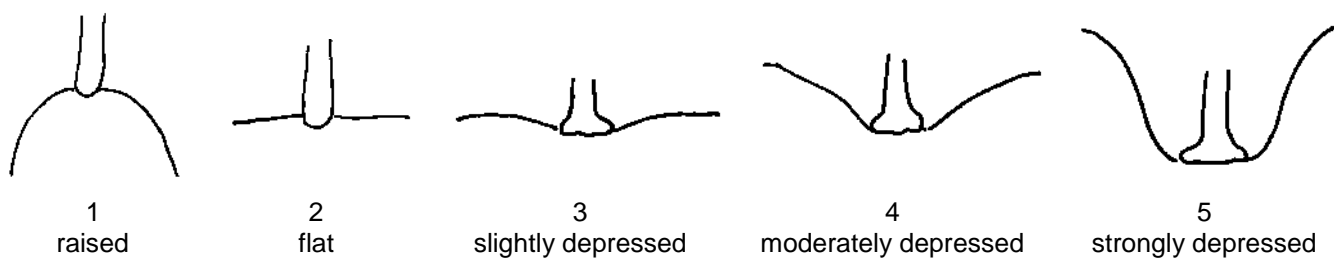
#### Ad. 11: Fruit: shape in longitudinal section



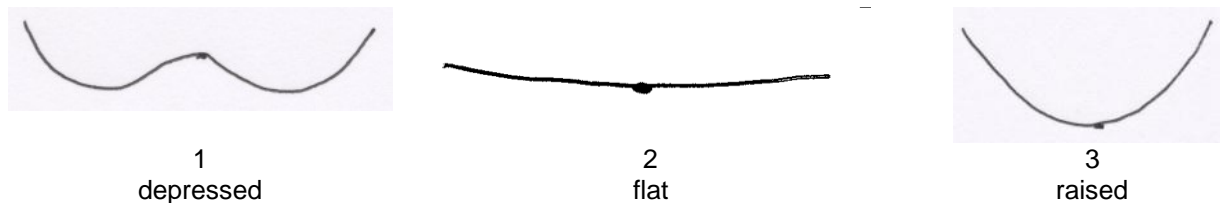
#### Ad. 13: Fruit: diameter

This assessment is based on the widest part of the fruit.

Ad. 15: Fruit: profile at stem end



Ad. 16: Fruit: profile at blossom end



Ad. 26: Only speckled varieties: Fruit: density of speckles

3  
weak

5  
medium

7  
strong

9. Literature

No reference to provide

10. Technical Questionnaire

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
|-------------------------|-----------------|-------------------|

|  |   |
|--|---|
|  | Application date:<br>(not to be filled in by the applicant) |
|--|---|

TECHNICAL QUESTIONNAIRE

to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire

1.1 Botanical name *Cucurbita maxima* Duch. X *Cucurbita moschata* Duch.

1.2 Common name *Cucurbita maxima* X *Cucurbita moschata* - Interspecific hybrids

2. Applicant

Name

Address

Telephone No.

Fax No.

E-mail address

Breeder (if different from applicant)

3. Proposed denomination and breeder's reference

Proposed denomination  
(if available)

Breeder's reference



|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
|-------------------------|-----------------|-------------------|

4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]  
 (please state parent varieties)

(.....) x (.....)  
 Species / identity of female parent Species / identity of male parent

(b) partially known cross [ ]  
 (please state known parent variety(ies))

(.....) x (.....)  
 Species / identity of female parent Species / identity of male parent

(c) unknown cross [ ]

4.1.2 Mutation [ ]  
 (please state parent variety)

4.1.3 Discovery and development [ ]  
 (please state where and when discovered and how developed)

4.1.4 Other [ ]  
 (please provide details)

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
|-------------------------|-----------------|-------------------|

#### 4.2 Method of propagating the variety (hybride)

##### 4.2.1 Seed-propagated varieties

In the case of hybrid varieties the production scheme for the hybrid should be provided on a separate sheet. This should provide details of all the parent lines required for propagating the hybrid e.g.

##### Single Hybrid

(.....) x (.....)  
 Species / identity of female parent Species / identity of male parent

##### Three-Way Hybrid

(.....) x (.....)  
 Species / identity of female line Species / identity of male line

⏟

(.....) x (.....)  
 Species / identity of single hybrid used as female parent Species / identity of male parent

and should identify in particular:

- (a) any male sterile lines
- (b) maintenance system of male sterile lines."

4.2.2 Vegetatively propagated varieties [...]

4.2.3 Other [ ]  
 (please provide details)

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
|-------------------------|-----------------|-------------------|

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

| Characteristics    | Example Varieties | Note |
|--------------------|-------------------|------|
| <b>To complete</b> |                   |      |

|                         |                 |                   |  |
|-------------------------|-----------------|-------------------|--|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |  |
|-------------------------|-----------------|-------------------|--|

6. Similar varieties and differences from these varieties

*Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.*

| Denomination(s) of variety(ies) similar to your candidate variety | Characteristic(s) in which your candidate variety differs from the similar variety(ies) | Describe the expression of the characteristic(s) for the <b>similar</b> variety(ies) | Describe the expression of the characteristic(s) for <b>your</b> candidate variety |
|---|---|--|--|
| <i>Example</i>  | <i>Seed: size</i>   | <i>medium</i>  | <i>large</i>   |
| <i>To include</i>   |   |  |  |

Comments:

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
|-------------------------|-----------------|-------------------|

7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes ☐ No ☐

(If yes, please provide details): .....

**For example:** behavior towards pathogens

|  | not tested | susceptible | resistant | Resistance level:<br>intermediate ?<br>highly? |
|--|------------|-------------|-----------|--|
| <i>Colletotrichum orbiculare</i> race 1              |            |             |           |  |
| <i>Colletotrichum orbiculare</i> race 2              |            |             |           |  |
| <i>Colletotrichum orbiculare</i> race 3              |            |             |           |  |
| <i>Fusarium oxysporum</i> f.sp. <i>cucurbitaceae</i> |            |             |           |  |
| <i>Podosphaera xanthii</i>                           |            |             |           |  |
| Cucumber green mottle mosaic virus (CGMMV)           |            |             |           |  |
| Cucumber mosaic virus (CMV)                          |            |             |           |  |
| Papaya ringspot virus (PRSV)                         |            |             |           |  |
| Zucchini yellow mosaic virus (ZYMV)                  |            |             |           |  |

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes ☐ No ☐

(If yes, please provide details)

7.3 Other information

**Variety use**

(a) vegetable ☐

(b) rootstock, *with an impact on:*

- the adaptation to abiotic stresses (low temperature, salinity, water excess or shortage) ☐
- the yield via an increased vigor ☐
- Improving fruit quality ☐
- the control of soil-borne diseases ☐

|  | not tested | susceptible | resistant | Resistance level:<br>intermediate ?<br>highly? |
|--|------------|-------------|-----------|--|
| <i>Didymella bryoniae</i>                                  |            |             |           |  |
| <i>Fusarium oxysporum</i> f.sp. <i>radicis cucumerinum</i> |            |             |           |  |
| <i>Macrophomina phaseolina</i>                             |            |             |           |  |
| <i>Monosporascus cannonballus</i>                          |            |             |           |  |
| <i>Phomopsis sclerotioïdes</i>                             |            |             |           |  |
| <i>Rhizoctonia solani</i>                                  |            |             |           |  |
| <i>Verticillium albo- atrum</i>                            |            |             |           |  |
| <i>Verticillium dahliae</i>                                |            |             |           |  |
| <i>Meloidogyne arenaria</i>                                |            |             |           |  |
| <i>Meloidogyne incognita</i>                               |            |             |           |  |
| <i>Meloidogyne javanica</i>                                |            |             |           |  |
| <i>Meloidogyne hapla</i>                                   |            |             |           |  |

(c) other: (please provide details) ☐

.....

A representative color image of the fruit at full development should accompany the Technical Questionnaire.

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| TECHNICAL QUESTIONNAIRE | Page {x} of {y} | Reference Number: |
|-------------------------|-----------------|-------------------|

8. Authorization for release

(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?

Yes      [   ]                      No      [   ]

(b) Has such authorization been obtained?

Yes      [   ]                      No      [   ]

If the answer to (b) is yes, please attach a copy of the authorization.

9. Information on plant material to be examined or submitted for examination.

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

|   |           |          |
|---|-----------|----------|
| (a) Microorganisms (e.g. virus, bacteria, phytoplasma)    | Yes [   ] | No [   ] |
| (b) Chemical treatment (e.g. growth retardant, pesticide) | Yes [   ] | No [   ] |
| (c) Tissue culture  | Yes [   ] | No [   ] |
| (d) Other factors   | Yes [   ] | No [   ] |

Please provide details for where you have indicated "yes".

.....

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant's name

Signature       Date

[Annex follows]

## Comments from the Subgroup on the first Draft (2013-02-18) of Document TG/CUCUR\_MMO(proj.1)

### Chapter 1- Subject of these Test Guidelines

These Test Guidelines apply to all varieties of **interspecific hybrids** of *Cucurbita maxima* (Duch) X *Cucurbita moschata* (Duch). Such varieties can be used as rootstocks for *Cucurbitaceae* varieties.

**FR proposal:** The **parent lines** of these hybrids are **not the subject of this guideline**, but they have to refer to the appropriate guidelines TG/155/4 Rev.: *Cucurbita maxima* Duch., or TG/234/1: *Cucurbita moschata* Duch.

### Chapter 4- Assessment of Distinctness, Uniformity and Stability

#### **(NL) 4.2. Uniformity (a) Hybrid varieties**

Reference made to the General Introduction, but in TG/1/3 **no specific approach** is mentioned **regarding interspecific hybrids**

**(FR answer)**

I agree, no specific reference, but the general introduction can be useful to be aware of the “philosophy of work”.

In answer to a **(ISF)** remarks

I also add a sentence **excluding the use of this guideline for the parental lines**, with the references to the appropriate guidelines.

#### **4.2.3**

**(NL)** Usually in an interspecific cross, the parent lines found are the **inbreds**.

So you can find plants which are : *C. maxima* or *C. moschata*.

It is very difficult on the other hand to indicate **possible off-types** in the plants **resulting from this crossing**.

**(FR answer)**

I add a paragraph about the consideration of inbreds. I propose to follow the decision rule defined by a population standard of 3% and an acceptance probability of at least 95% to identify the number of inbreds which can be tolerated (as in Cauliflower).

I would like to keep the paragraph about off-types, to have at least the possibility to identify pollutions...

### Chapter 7-Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de characters

#### **2. VG Plant: length of main stem**

**(+)**

**(ES)** It's difficult to observe and/or measure. We prefer **don't include** this characteristic.

**(NL)** It is not easy to observe this, because the plant tends to develop many branches. NL colleague suggest looking at the volume of the plant or the surface the plant covers in the field, just before the plants of the variety which grows fastest, start to 'touch' each other in the field

**(HU)** The same problem as at *Cucurbita maxima* (TG/155/4). It is impossible to see the length of main stem at the stage of first fully developed fruit. It has **to be deleted** or **observe at earlier stage**

To **change 8.1(a)** and add **explanation**.

**(FR answer)**

The wording “Length” is probably not the optimal one...

I propose to consider the vigor of the plant at relative early stage (new stage 8.1 (a)):

Not “when the 1<sup>st</sup> fruit is fully developed”, but **“after the beginning of flowering”**.

To be discussed.

#### **4. VG Leaf blade: ~~margin~~ division**

**(+)**

**(NL)** Looking at the explanation it is **not the margin** which is meant here, but the **division of the leaf blade** as a whole. So then the wording could be: Leaf blade: division (or incisions?) 1. absent or very shallow, etc

**(HU)** agree with NL

**(FR proposal)**

I agree to replace "margin" by "division".

---

**5. VG Leaf blade: intensity of green color of upper side**

---

(HU) **Tetsukabuto** was only medium (5) in our trial

(FR answer)

We consider this variety at the level (7) in France.

In Hungary, Which variety did you consider to illustrate the state (7), if **Tetsukabuto** illustrate state (5)?

To be discussed.

---

**6. VG Leaf blade: silver patches**

---

(HU) Almost all varieties have **small intensity of silvery patches**. It can be observed better on young leaves.

(FR answer)

To be discussed.

To add an explanation (+) ?

---

**7. VG Leaf blade: blistering**

---

(JP) Is it consistent with the characteristics 20: Fruit: blistering and 21: Fruit: intensity of blistering?

(FR answer)

To be discussed

I don't know if there is a link between these characteristics.

(NL) We prefer **not to include** this characteristic, not contributing to distinctness

(ES) We prefer **not to include** this characteristic.

(HU) agree with NL. We propose **to delete** it.

(FR proposal)

To delete this characteristic. To be validated.

---

**9. VG Petiole: diameter (at base)**

---

(NL) We prefer **not to include** this characteristic: very labourous, not contributing to distinctness

(HU) agree with NL. We propose **to delete** it.

(FR proposal)

To delete this characteristic. To be validated

---

**NEW VG Peduncle : diameter**

(ES-1)

\*\*\*

(ES) We would like to maintain this characteristic as in TG of *C. maxima* and *C. moschata*.

(FR answer)

To be discussed

Can (ES) provide example varieties for the states 3, 5, 7?

---

**NEW MS/ Male flower: diameter of corolla**

(ISF-1)

\*\*\*

| QN | (b) |        |       |   |
|----|-----|--------|-------|---|
|    |     | small  | [...] | 3 |
|    |     | medium | [...] | 5 |
|    |     | large  | [...] | 7 |

---

**NEW VG Male flower: overlapping of petals**

(ISF-2)

\*\*\*

| QN | (b) |                  |       |   |
|----|-----|------------------|-------|---|
|    |     | free             | [...] | 1 |
|    |     | some overlapping | [...] | 2 |
|    |     | all overlapping  | [...] | 3 |

---



| NEW<br>(ISF-3)<br>*** | MS/<br>VG | Female flower: diameter of corolla |     |   |
|-----------------------|-----------|------------------------------------|-----|---|
| QN                    |           | small                              | ... | 3 |
|                       |           | medium                             | ... | 5 |
|                       |           | large                              | ... | 7 |

(ISF) We think **additional Flowering characteristics** could lead to distinction.  
We propose to include the **same characteristics as** in *Lagenaria*,  
(with of course different numbering and example varieties)

(FR answer)

Can (ISF) provide Example varieties?

(FR) are not used to work with these characteristics for this species, and we didn't observed a variability.  
Real interest?

To be discussed.

| 11. VG | Fruit: shape in longitudinal section |                                    |  |   |
|--------|--------------------------------------|------------------------------------|--|---|
| (+)    |                                      |                                    |  |   |
| PQ (b) | oblate                               | Carnivor, Kublai, Iron Cap, Kazako |  | 1 |
|        | oblong                               | Becada                             |  | 2 |
|        | Circular                             | Tetsukabuto, Ferro                 |  | 3 |
|        | ovate                                | Flexifort                          |  | 4 |
|        | elliptic                             |                                    |  | 5 |

(NL) Add **Ovate** as shape, with example variety **Flexifort**.

**Kazako** is an example variety for **Oblate**

(ES) We have observed the last year the variety **Becada**, listed in the common catalogue. Its fruit has a quadrangular shape.

NL/ES: Becada is a *C. moschata*, not to include in this guideline.

(HU) oblate (medium) – **Kazako**.

oblate (broad) - **Kublai** and **Carnivor**

(FR answer)

#### TGP/14/1 – Definitions

**Oblate Transverse elliptic**; ellipse shaped but shorter than broad, broadest at the middle, with margins tapering convexly and evenly to the base and apex, the longest dimension orientated transversely. Forms part of the 'elliptic' series.

**Quadrangular** Rectangular; four-sided with opposite sides parallel and all angles approximately 90 degrees. The term '**oblong**' is preferred for UPOV use.

**Oblong Approximately rectangular**, with more or less parallel sides terminating obtusely at both ends; four-sided with opposite sides parallel and all angles approximately 90 degrees. The 'oblong' series also includes 'square' and 'linear', differing only in their length/width ratios, 'square' having the same dimension in both its length and its width.

**Circular Round**; length/width ratio as well as dimension in all directions 1:1. The term 'circular' is preferable to 'round' and 'orbicular' for UPOV use. Forms part of the 'elliptic' series. Also applies to arrangement. Compare 'rounded' which applies to part of an outline, not the full shape.

**Ovate Chicken-egg-shaped**; broadest below the middle, that is towards the point of attachment, the margin entirely convex, although the apex may be either rounded or pointed. Compare the 'obovate' series which is broadest towards the apex and 'ovoid' which applies to three-dimensional shape.

**Elliptic Ellipse-shaped**; broadest at the middle, the margins tapering convexly and evenly to either end. The elliptic series also includes 'circular' and 'oblate', differing only in their length/width ratios.

**FR includes** the states "Oblong" and "Ovate".

- Do we need to create 2 states: "oblate" and "broad oblate"?
- Does the state "Elliptic" exist? Which example variety?

To be discussed

|     |                      |                          |   |
|-----|----------------------|--------------------------|---|
| 12. | MG / Fruit: length   |                          |   |
|     | VG                   |                          |   |
| QN  | (b)                  | short<br>medium<br>long  | Shintosa, 3<br>2012.02 5<br>Flexifort 7               |
| 13. | MG / Fruit: diameter |                          |   |
| (+) | VG                   |                          |   |
| QN  | (b)                  | small<br>medium<br>large | Kazako, Shintosa 3<br>Flexifort 5<br>Zadok, 2012.02 7 |

(NL) The variety **Flexifort** is about 25 to 30 cm long and about 20 to 25 cm in diameter.

Where to put as example variety?

The variety **Kazako** is about 10 to 15 cm length and about 15 to 20 cm in diameter.

Where to put as example variety?

**Zadok** has a diameter of about 40 cm, so is an example variety for a large diameter.

(FR answer)

|     |                      |                                   |   |
|-----|----------------------|-----------------------------------|---|
| 12. | MG / Fruit: length   |                                   |   |
|     | VG                   |                                   |   |
| QN  | (b)                  | short<br>medium<br>long           | Shintosa 3<br>2012.02 5<br>Flexifort 7                |
|     |                      | 12 – 16cm<br>17 - 25 cm<br>>25 cm |   |
| 13. | MG / Fruit: diameter |                                   |   |
| (+) | VG                   |                                   |   |
| QN  | (b)                  | small<br>medium<br>large          | Kazako, Shintosa 3<br>Flexifort 5<br>2012.02, Zadok 7 |
|     |                      | 15 – 20cm<br>20 – 25cm<br>>25cm   |   |

Example varieties included.

Coherent “quantitative” appreciation of the states of expression.

## 20. VG Fruit: blistering

(NL) We should find a **better word than blistering** ? which is usually used for leaf blades. Where in TGP/14?

(ES) We prefer use the term “**roughness**” or to change the definition of the characteristic to “Fruit: texture of surface” with only two notes, 1-smooth and 2-rough. We think is very difficult to distinguish blistering and roughness.

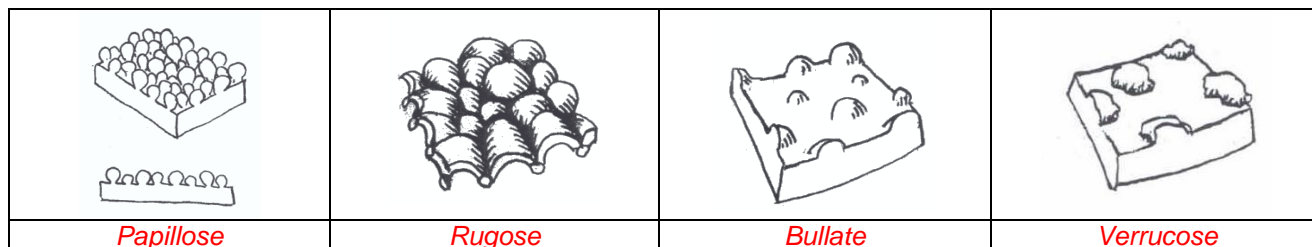
(HU) Instead of blistering may be good the **roughness** or **bullate**/rough surface

(FR answer)

**Bullate** Blistered; the surface covered with irregular blister-like convexities. Compare ‘**papillose**’ with more elevated, nipple-like projections and ‘**verrucose**’ which is warty.

**Papillose** Pimpled, with small, rounded, soft to firm, unequal bumps. Compare ‘**bullate**’ which has flatter, blister-like convexities.

**Verrucose** Warty; with more or less irregularly shaped wart-like elevations. Compare ‘**bullate**’, where the convexities are blister-like.



**Rugose** Impressed wrinkled; as in a **leaf** with convex areas in between the netted venation. Compare ‘corrugated’ and ‘reticulate’.

**Corrugated** Wrinkled; crumpled or folded into alternating furrows and ridges, e.g. *Papaver* **petals** in the bud. Compare ‘rugose’.

**Reticulate** Netted; with a fine network contrasting in color or texture, e.g. veins on the abaxial side of a **leaf**. Compare ‘rugose’ which has convex areas in between the netted venation.

FR proposal Fruit: Bullate surface

To be discussed

---

**21. VG Fruit: intensity of blistering**

---

(NL) We should find a **better word** than blistering ?  
We will look for **example varieties**, which do you think is a good one for **strong**?  
(ES) Degree of **roughness**?  
(HU) We propose to delete it.  
(FR proposal)  
Fruit: Intensity of the **Bullate surface**  
**Few variability** up to now...  
To be discussed.

---

**22. VG Fruit: number of color of skin**

---



QL (b) one  
two  
more than two  
(JP) Is it a correct QL?  
Isn't there color hue?  
(HU) Almost all varieties had only one color (also Kublai and Strong Tosa) in our trial. They were dark green with small, light speckles.  
(FR answer)  
(FR) share the (HU) point of view.  
To be discussed

---

**23. VG Fruit: ground color of skin**

---

QL (b) cream  
orange  
Green  
(JP), and (ES) to change to **PQ** ?  
(FR) proposal **QL** characteristic  
To be discussed  
(ES) We prefer the term "**main**" in order to describe the color with the largest area over the whole fruit.  
(FR answer) Last year UPOV Office recommended (*Lagenaria* draft discussion) the use of the wording "**ground color**" better than ground color.  
To be discussed  
(NL) Fruit color of the *C. moschata* Waltham **Butternut** : beige (or tan)  
**Zadok** is an example variety with that color.  
(FR answer)  
To include **Zadok** for the **state 1 : tan**.  
(NL) Furthermore, is ground color the **right wording** or should it be main color? See also **char 24**.  
(FR answer)  
Last year, UPOV office recommended replacing main color by **ground color** for the *Lagenaria* fruit.  
(NL) Are there **extra characteristics** needed for the secondary color (as additional char to main color)?  
(in case of **ground color** it should be **over color**)  
(FR answer)  
Thank you to make some proposals.

|  |    |   |   |
|--|----|---|---|
| 25.  | VG | Fruit : speckles  |   |
| 26.  | VG | Only speckled varieties: Fruit : density of speckles (+)  |   |
| (NL)   |    | What is meant by <b>speckles</b> ? Explanation in the form of illustration needed   |   |
| (ES)   |    | If this characteristic is to observe the speckles, spots, etc. of the fruit skin, we prefer to use the characteristic <b>marbling</b> like the in the TG of <i>C. moschata</i> , with notes 1 (absent of very weak) to 9 (very strong). Nevertheless we think an explanation is needed. |   |
| (HU)   |    | Ch.26: We propose to delete Ch.26, if there isn't any example variety. Ch.25 is enough.   |   |
| (FR answer)  |    | Definition: <u>Speckle</u> : a small or slight mark usually of a contrasting color, as on the skin, a bird's plumage, or eggs.  |   |
|  |    |   |  |

This wording was proposed last year to describe the “blotches” on the *Lagenaria* fruits.  
To be discussed

|                                 |     |                          |             |
|---------------------------------|-----|--------------------------|-------------|
| NEW<br>(FR-1)                   | VG  | Fruit: size of speckles  |             |
| QN                              | (b) | small<br>medium<br>Large | 3<br>5<br>7 |
| FR proposal<br>To be discussed. |     |                          |             |

---

27. VG Fruit: main color of flesh

PQ (b) cream  
yellow  
orange  
reddish orange

(NL) It is very **difficult to see** the difference between **yellow** and **orange**, there is an overlap between:  
dark yellow and  
light orange

(HU) agree with NL

(FR answer) We don't would like to enter in the intensity of the color of flesh... Can we imagine the following states:

cream (1), yellow to orange (2), reddish orange (3) ? To be discussed.

---

28. VG Seed: size

---

29. VG Seed: shape

---

30. VG Seed: color of coat

---

(NL) those characteristics are influenced by the fact the seed does **not have a viable embryo**.

We prefer **not to include**

(HU) agree with NL

(ES) Hybrids usually don't have seeds fully developed. We propose **not include the seed characteristics** in this protocol

(FR answer)

We didn't have the opportunity to see variability on the seeds we extracted.

But it can exist phenotypical differences due to the species of the female parent.

- Case of Zadok, whose female parent is a *C. maxima* variety.
- Case of the varieties in the Tetsukabuto type, whose female parent is a *C. moschata* variety.

Do you have the opportunity to test the germination capacity of the harvest seeds?

**Deletion** of these characteristics to be discussed.

## Chapter 8 - Explanations on the Table of Characteristics

### 8.1 Explanations covering several characteristics

(a) Observations which should be made on fully developed leaves, **when the first fruit is fully developed**.

(ES) (a) Observations which should be made on fully developed leaves, **after the beginning of flowering**

FR proposal:

This earlier observation might be more appropriate.

To be discussed.

(b) Observations which should be made on fully developed **fruit at physiological maturity**.

(FR) How to assess the physiological maturity?

- Fruit at full size
- How many days after flowering? 60 days, is it enough? Because there is no necessary a change of color...

FR proposal:

To be discussed.

(c) Observations which should be made on fully developed and dry seed, after washing and drying in the shade.

(ES) (c) **to delete**, if deletion of the char. 28, 29, 30 is validated

FR proposal:

To update if necessary.

## 8.2 Explanations for individual characteristics

### Ad.2: Plant: Length of the main stem

(HU) about the char.2 **“Plant: length of main stem”**

“The same problem as at *Cucurbita maxima* (TG/155/4). It is impossible to see the length of main stem at the stage of first fully developed fruit. It has **to be deleted** or **to observe at earlier stage**

To **change 8.1(a)** and add **explanation**.

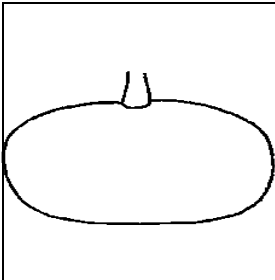
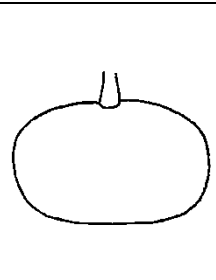
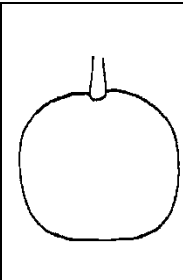
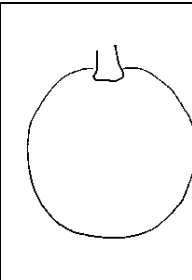
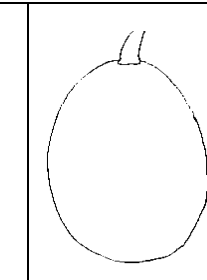
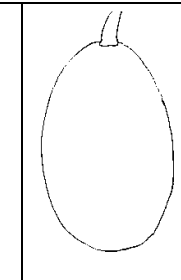
#### FR proposal:

The vigor can be assessed through the volume of the plant or the surface the plant covers in the field, just after the beginning of flowering -8.1.(a) stage.

To be discussed.

### Ad.11: Fruit: shape in longitudinal section

#### FR proposal:

|  |  |  |   |  |  |
|--|--|--|---|--|--|
|  |  |  |  |  |  |
| New ?  | 1  | 2  | 3   | 4  | 5  |
| broad oblate   | medium oblate  | oblong   | circular  | ovate  | elliptic   |

(HU) **oblate (medium) – Kazako.**

**oblate (broad) - Kublai and Carnivor**

Necessity to include “broad oblate”?

To be discussed.

## Chapter 10 - Technical Questionnaire

### 4. Information on the breeding scheme and propagation of the variety

(ISF) par. 4.2. Where a Hybrid variety is stated, **parent lines** should be added (as in *Lagenaria* guideline).

#### FR proposal:

It is necessary an hybrid, the guideline is dedicated to interspecific hybrids *C. max* X *C. mosch.*

I include the complete following paragraphs

4.1 Information on the Breeding scheme

[...]

4.2 Method of Propagating of the variety

[...]

Importance to precise the species of each parent, or parental components.

To be discussed.

### 7. Additional information which may help in the examination of the variety

ISF In the Technical Questionnaire, several diseases are mentioned, but **none** of them appear in the **Table of characteristics**. Is this correct?

#### FR answer

To introduce some characteristics in the Table of characteristics, it is compulsory to:

1. produce pathological test protocols for all included characteristics



and perhaps before that...

2. identify "priorities" between the characteristics
  - a. depending on impact of the damage?
  - b. the existence of current breeding work
  - c. ...

The contribution of all partners is required.

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

**ISF** Under 7.1 *Fusarium oxysporum* f.sp. *cucurbitaceae* is mentioned. Is this not the same as *Fusarium oxysporum* f.sp. *radicis cucumerinum* mentioned under 7.3? So is **For** or **Foc** meant?

**FR answer:**

For me, they are different fungi:

- ***Fusarium oxysporum* f.sp. *cucurbitaceae*** is the special form which can affect all cucurbits, it is a "generic form", in opposition for example to the special form "*melonis*" which affects especially varieties of melon, or the special form "*lagenariae*" which affects especially varieties of *Lagenaria*.
  - vascular fungus : **Fusarium wilt**
- ***Fusarium oxysporum* f.sp. *radicis cucumerinum*** is another fungus, which can affect all cucurbits (melon, squash, ...)
  - Fusarium of root system

Remark: as different in Tomato species as Fol (*Fusarium oxysporum* f.sp. *lycopersici*) and Forl (*Fusarium oxysporum* f.sp. *radicis lycopersici*).

- **To check this information with pathologists.**

7.3 Other information

**ISF** We propose to **delete all races of *Fusarium* .... *melonis* and *Fusarium* ..... *niveum***, since *Cucurbita maxima* x *Cucurbita moschata* is a **non host**.

**FR answer:**

I agree these deletions (even if in the literature, some rare cases of contamination have been reported).

**To check this information with pathologists.**

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## Comments on Example varieties

(JP) Regarding 'Shintosa' and 'Tetsukabuto', we recognize both varieties are **same variety** in Japan. ('Shintosa' = 'Tetsukabuto')

- Do you have distinguishable description or information between both varieties?
- We would like to confirm it.

(JP) Variety Information of Japan: 'Shintosa' was registered under the previous law in Japan in 1951. The synonym was named 'Tetsukabuto'.

- Extraction from Japanese vegetable catalog in 1952



Registered number 41  
 (Former law: Agricultural Seeds and Seedlings Law)

Registered name Shintosa (F1 hybrid)

Former name Tetsukabuto (Synonym)

(NL) Note that **Ferro** is in fact a synonym of **Shintosa**. There are some misunderstandings about **Ferro**, **Shintosā**, **Shintoza** and **Tetsukabuto** and **Iron Cap**.

(FR answer)

Very interesting information, **to be discussed**.

We need to:

- **identify the synonymies**, and
- **clarify the list of the example varieties** included in the Guideline.

## Comments on Pathogens / Soil borne diseases

(NL) **we prefer not to include names of pathogens/soil borne diseases**

The mentioned diseases probably usually do not affect the interspecific hybrid which is the subject of this guideline, but only the species which are grafted on it.

For example *Fus. ox. f.sp. melonis* is a **forma specialis** especially affecting melon. So this forma does not affect other species.

Is there anything known about **susceptibility of the interspecific hybrid** to all the mentioned diseases?

(FR answer)

Of the course we have to delete the non - host diseases.

But for other pathogens / soil borne disease, I didn't find literature... so it is only hypothesis.

Could ISF help us in these searches?



**TGP/8/1: PART II : 8 : THE METHOD OF UNIFORMITY ASSESSMENT ON THE BASIS OF OFF-TYPES**

page 101

Table and figure 3: Population Standard = **3%**  
Acceptance Probability **95%**  
n=sample size, k=maximum number of off-types

| n               | k        |
|-----------------|----------|
| 1 to 1          | 0        |
| 2 to 12         | 1        |
| <b>13 to 27</b> | <b>2</b> |
| 28 to 46        | 3        |
| 47 to 66        | 4        |

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**TGP/8/1: PART II : 8 : THE METHOD OF UNIFORMITY ASSESSMENT ON THE BASIS OF OFF-TYPES**

page 102

Table and figure 4: Population Standard = **2%**  
Acceptance Probability **95%**  
n=sample size, k=maximum number of off-types

| n               | k        |
|-----------------|----------|
| 1 to 2          | 0        |
| 3 to 18         | 1        |
| <b>19 to 41</b> | <b>2</b> |
| 42 to 69        | 3        |

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**TGP/8/1: PART II : 8 : THE METHOD OF UNIFORMITY ASSESSMENT ON THE BASIS OF OFF-TYPES**

page 103

Table and figure 5: Population Standard = **1%**  
Acceptance Probability **95%**  
n=sample size, k=maximum number of off-types

| n              | k        |
|----------------|----------|
| 1 to 5         | 0        |
| <b>6 to 35</b> | <b>1</b> |
| 36 to 82       | 2        |

[End of Annex and of document]