

UPOV

TG/HAWTH(proj.6)

ORIGINAL: English

DATE: 2008-03-08

**INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS**  
GENEVA

**DRAFT****HAWTHORN**

\*

UPOV Code: CRATA

*Crataegus* L.**GUIDELINES****FOR THE CONDUCT OF TESTS****FOR DISTINCTNESS, UNIFORMITY AND STABILITY***prepared by an expert from Mexico*

*to be considered by the Technical Committee at its forty-fourth session,  
to be held in Geneva, from April 7 to 9, 2008*

## Alternative Names:\*

| <i>Botanical name</i> | <i>English</i> | <i>French</i> | <i>German</i> | <i>Spanish</i>                                                  |
|-----------------------|----------------|---------------|---------------|-----------------------------------------------------------------|
| <i>Crataegus</i> L.   | Hawthorn       | Aubépine      | Weißdorn      | Espino, Espinero, Manzanilla,<br>Marjoleto, Marzoleto, Tejocote |

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.

\* 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.]

| <u>TABLE OF CONTENTS</u>                                                                       | <u>PAGE</u> |
|------------------------------------------------------------------------------------------------|-------------|
| 1. SUBJECT OF THESE TEST GUIDELINES.....                                                       | 3           |
| 2. MATERIAL REQUIRED .....                                                                     | 3           |
| 3. METHOD OF EXAMINATION.....                                                                  | 3           |
| 3.1 Number of Growing Cycles .....                                                             | 3           |
| 3.2 Testing Place .....                                                                        | 3           |
| 3.3 Conditions for Conducting the Examination.....                                             | 3           |
| 3.4 Test Design .....                                                                          | 4           |
| 3.5 Number of Plants / Parts of Plants to be Examined.....                                     | 4           |
| 3.6 Additional Tests .....                                                                     | 4           |
| 4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY .....                                  | 4           |
| 4.1 Distinctness .....                                                                         | 4           |
| 4.2 Uniformity.....                                                                            | 5           |
| 4.3 Stability .....                                                                            | 5           |
| 5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL.....                            | 5           |
| 6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS .....                                          | 6           |
| 6.1 Categories of Characteristics.....                                                         | 6           |
| 6.2 States of Expression and Corresponding Notes.....                                          | 6           |
| 6.3 Types of Expression .....                                                                  | 6           |
| 6.4 Example Varieties .....                                                                    | 6           |
| 6.5 Legend.....                                                                                | 6           |
| 7. TABLE OF CHARACTERISTICS/TABLEAU DES<br>CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES..... | 7           |
| 8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS .....                                          | 18          |
| 8.1 Explanations covering several characteristics .....                                        | 18          |
| 8.2 Explanations for individual characteristics .....                                          | 18          |
| 9. LITERATURE .....                                                                            | 25          |
| 10. TECHNICAL QUESTIONNAIRE .....                                                              | 26          |

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Crataegus* L., of the family *Rosaceae*.

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 graft sticks, grafted plants or plants on their own roots.

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

8 graft sticks or 5 plants.

In the case of grafted plants, the rootstock to be used is specified by the competent authority.

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.

The growing cycle is considered to be the duration of a single growing season, beginning with bud burst (flowering and vegetative), growth and fruit harvest and concluding when the following dormant period ends with the swelling of new season buds.

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*

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. In particular, it is essential that the plants produce a satisfactory crop of fruit in each of the two growing cycles.

### 3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least five plants.

3.4.2 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 *Number of Plants / Parts of Plants to be Examined*

Unless otherwise indicated, all observations should be made on 5 plants or parts taken from each of 5 plants. In the case of parts of plants, the number to be taken from each of the plants should be 2.

### 3.6 *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.

#### 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.

## 4.2 *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.

4.2.2 For the assessment of uniformity, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 5 plants, no off-types 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 tested, either by growing a further generation, or by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the previous 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) Plant: growth type (characteristic 1);
- (b) Plant: habit (characteristic 2);
- (c) Shoot: presence of thorns (characteristic 6);
- (d) Leaf blade: lobes (characteristic 15);
- (e) Petiole: length (characteristic 22);
- (f) Fruit: color (characteristic 32).

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

## 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*

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.

### 6.3 *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

(a) – (g) 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.<br/>(*)<br/>(+)</b> | <b>Plant: growth type</b>     | <b>Plante: type de croissance</b>         | <b>Pflanze: Wuchstyp</b>        | <b>Planta: hábito de crecimiento</b> |                                                                        |               |
| <b>PQ (a)</b>             | shrub                         | arbrisseau                                | Strauch                         | arbusto                              | Calpantino, Candelaria, Compacta, Mitzi                                | 1             |
|                           | semi-shrub                    | demi-arbrisseau                           | Halbstrauch                     | semiarbusto                          | Azucena, Paul's Scarlet                                                | 2             |
|                           | tree                          | arbre                                     | Baum                            | árbol                                | Calpan Gold, Plena                                                     | 3             |
| <b>2.<br/>(*)<br/>(+)</b> | <b>Plant: habit</b>           | <b>Plante: port</b>                       | <b>Pflanze: Wuchsform</b>       | <b>Planta: porte</b>                 |                                                                        |               |
| <b>PQ (a)</b>             | fastigate                     | très dressé                               | sehr aufrecht                   | fastigiado                           | Ergo, Gaca, Pingo                                                      | 1             |
|                           | upright                       | dressé                                    | aufrecht                        | erguido                              | Azucena, Calpar, Stricta                                               | 2             |
|                           | spreading                     | étalé                                     | breitwüchsig                    | rastrero                             | Atexcac                                                                | 3             |
|                           | semi drooping                 | demi-retombant                            | halbüberhängend                 | semicolgante                         | Candelaria, Chico                                                      | 4             |
|                           | drooping                      | retombant                                 | überhängend                     | colgante                             |                                                                        | 5             |
|                           | weeping                       | pleureur                                  | lang überhängend                | llorón                               | Pendula                                                                | 6             |
| <b>3.<br/>(+)</b>         | <b>Plant: shape of canopy</b> | <b>Plante : forme du bouquet foliaire</b> | <b>Pflanze: Form des Laubes</b> | <b>Planta: forma de la copa</b>      |                                                                        |               |
| <b>PQ (b)</b>             | semi-circular                 | semi-circulaire                           | halbrund                        | semi-circular                        | Ara                                                                    | 1             |
|                           | ovate                         | ovale                                     | eiförmig                        | oval                                 | Edgar, Epi, Pingo                                                      | 2             |
|                           | oblong                        | oblongue                                  | rechteckig                      | oblonga                              | Gloria                                                                 | 3             |
|                           | circular                      | circulaire                                | rund                            | circular                             | Erick                                                                  | 4             |
|                           | transverse elliptic           | elliptique transverse                     | quer elliptisch                 | elíptica transversal                 | Chela, Poblano                                                         | 5             |
|                           | obovate                       | obovale                                   | verkehrt eiförmig               | oboval                               | Ade                                                                    | 6             |
| <b>4.</b>                 | <b>Plant: height</b>          | <b>Plante: hauteur</b>                    | <b>Pflanze: Höhe</b>            | <b>Planta: altura</b>                |                                                                        |               |
| <b>QN (a)</b>             | short                         | courte                                    | niedrig                         | baja                                 | Belén, Gloria                                                          | 3             |
|                           | medium                        | moyenne                                   | mittel                          | media                                | Epi, Mutabilis, Robelo                                                 | 5             |
|                           | tall                          | haute                                     | hoch                            | alta                                 | Compacta, Tequex                                                       | 7             |

|               | English                          | français                            | Deutsch                                 | español                             | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|---------------|----------------------------------|-------------------------------------|-----------------------------------------|-------------------------------------|------------------------------------------------------------------------|---------------|
| <b>5.</b>     | <b>Plant: density of foliage</b> | <b>Plante: densité du feuillage</b> | <b>Pflanze: Dichte des Laubes</b>       | <b>Planta: densidad del follaje</b> |                                                                        |               |
| <b>QN (b)</b> | sparse                           | faible                              | locker                                  | escasa                              | Superior                                                               | 3             |
|               | medium                           | moyenne                             | mittel                                  | media                               | Epi, Paul's Scarlet                                                    | 5             |
|               | dense                            | dense                               | dicht                                   | densa                               | Carrieri                                                               | 7             |
| <b>6. (*)</b> | <b>Shoot: presence of thorns</b> | <b>Rameau: présence d'épines</b>    | <b>Trieb: Vorhanden-sein von Dornen</b> | <b>Rama: presencia de espinas</b>   |                                                                        |               |
| <b>QL (a)</b> | absent                           | absentes                            | fehlend                                 | ausente                             | Compacta, Edgar, Epi                                                   | 1             |
|               | present                          | présentes                           | vorhanden                               | presente                            | Chela, Mutabilis, Pingo                                                | 9             |
| <b>7.</b>     | <b>Shoot: number of thorns</b>   | <b>Rameau: nombre d'épines</b>      | <b>Trieb: Anzahl Dornen</b>             | <b>Rama: número de espinas</b>      |                                                                        |               |
| <b>QN (a)</b> | few                              | petit                               | gering                                  | pocas                               | Salicifolia, Tequex                                                    | 1             |
|               | medium                           | moyen                               | mittel                                  | medio                               | Chela, Mutabilis, Pingo                                                | 2             |
|               | many                             | grand                               | groß                                    | abundantes                          | Carrieri, Tempranero                                                   | 3             |
| <b>8.</b>     | <b>Shoot: length of thorns</b>   | <b>Rameau: longueur d'épines</b>    | <b>Trieb: Länge der Dornen</b>          | <b>Rama: longitud de espinas</b>    |                                                                        |               |
| <b>QN (a)</b> | short                            | courtes                             | kurz                                    | corta                               | Chapinguero, Gloria                                                    | 3             |
|               | medium                           | moyennes                            | mittel                                  | media                               | Ara                                                                    | 5             |
|               | long                             | longues                             | lang                                    | larga                               |                                                                        | 7             |
| <b>9.</b>     | <b>Shoot: length</b>             | <b>Rameau: longueur</b>             | <b>Trieb: Länge</b>                     | <b>Rama: longitud</b>               |                                                                        |               |
| <b>QN (a)</b> | short                            | court                               | kurz                                    | corta                               | Karen                                                                  | 3             |
|               | medium                           | moyen                               | mittel                                  | media                               | Tempranero                                                             | 5             |
|               | long                             | long                                | lang                                    | larga                               | Elena                                                                  | 7             |
| <b>10.</b>    | <b>Shoot: growth type</b>        | <b>Rameau: type de croissance</b>   | <b>Trieb: Wuchstyp</b>                  | <b>Rama: tipo de crecimiento</b>    |                                                                        |               |
| <b>QL (a)</b> | straight                         | droit                               | gerade                                  | recto                               | Ara, Elena, Stricta                                                    | 1             |
|               | zig zag                          | en forme de zigzag                  | zickzackförmig                          | en zigzag                           | Carrieri, Flexuosa                                                     | 2             |

|            | English                               | français                               | Deutsch                                      | español                                 | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|------------|---------------------------------------|----------------------------------------|----------------------------------------------|-----------------------------------------|------------------------------------------------------------------------|---------------|
| <b>11.</b> | <b>Leaf blade: length</b>             | <b>Limbe: longueur</b>                 | <b>Blattspreite: Länge</b>                   | <b>Limbo: longitud</b>                  |                                                                        |               |
| <b>QN</b>  | <b>(c)</b>                            |                                        |                                              |                                         |                                                                        |               |
|            | short                                 | court                                  | kurz                                         | corta                                   | Belén, Mutabilis                                                       | 3             |
|            | medium                                | moyen                                  | mittel                                       | media                                   | Epi                                                                    | 5             |
|            | long                                  | long                                   | lang                                         | larga                                   | Carrierei, Edgar                                                       | 7             |
| <b>12.</b> | <b>Leaf blade: width</b>              | <b>Limbe: largeur</b>                  | <b>Blattspreite: Breite</b>                  | <b>Limbo: anchura</b>                   |                                                                        |               |
| <b>QN</b>  | <b>(c)</b>                            |                                        |                                              |                                         |                                                                        |               |
|            | narrow                                | étroit                                 | schmal                                       | estrecho                                | Epi, Flexuosa, Mutabilis                                               | 3             |
|            | medium                                | moyen                                  | mittel                                       | medio                                   | Aurora, Edgar, Paul's Scarlet                                          | 5             |
|            | broad                                 | large                                  | breit                                        | ancho                                   | Wattiana                                                               | 7             |
| <b>13.</b> | <b>Leaf blade: ratio length/width</b> | <b>Limbe: rapport longueur/largeur</b> | <b>Blattspreite: Verhältnis Länge/Breite</b> | <b>Limbo: relación longitud/anchura</b> |                                                                        |               |
| <b>QN</b>  | <b>(c)</b>                            |                                        |                                              |                                         |                                                                        |               |
|            | small                                 | faible                                 | klein                                        | pequeña                                 | Flexuosa, Toba, Wattiana                                               | 3             |
|            | medium                                | moyen                                  | mittel                                       | media                                   | Azucena, Carrierei                                                     | 5             |
|            | large                                 | élevé                                  | groß                                         | grande                                  | Poblano, Stipulacea                                                    | 7             |
| <b>14.</b> | <b>Leaf blade: margin</b>             | <b>Limbe: bord</b>                     | <b>Blattspreite: Rand</b>                    | <b>Limbo: borde</b>                     |                                                                        |               |
| <b>(+)</b> |                                       |                                        |                                              |                                         |                                                                        |               |
| <b>PQ</b>  | <b>(c)</b>                            |                                        |                                              |                                         |                                                                        |               |
|            | entire                                | entier                                 | ganzrandig                                   | entero                                  | Flexuosa                                                               | 1             |
|            | crenate                               | crénelé                                | gekerbt                                      | crenado                                 | Karen                                                                  | 2             |
|            | bicrenate                             | bicrénelé                              | doppelt gekerbt                              | bicrenado                               | Tempranero                                                             | 3             |
|            | serrate                               | dentelé                                | gesägt                                       | serrado                                 | Compacta, Tzapingo                                                     | 4             |
|            | biserrate                             | bidentelé                              | doppelt gesägt                               | biserrado                               | Ade, Pingo, Toba                                                       | 5             |
| <b>15.</b> | <b>Leaf blade: lobes</b>              | <b>Limbe: lobes</b>                    | <b>Blattspreite: Lappen</b>                  | <b>Limbo: lóbulos</b>                   |                                                                        |               |
| <b>(*)</b> |                                       |                                        |                                              |                                         |                                                                        |               |
| <b>(+)</b> |                                       |                                        |                                              |                                         |                                                                        |               |
| <b>QL</b>  | <b>(c)</b>                            |                                        |                                              |                                         |                                                                        |               |
|            | absent                                | absents                                | fehlend                                      | ausente                                 | Ade, Mago                                                              | 1             |
|            | present                               | présents                               | vorhanden                                    | presente                                | Compacta, Flexuosa, Stricta                                            | 9             |

|            | English                              | français                              | Deutsch                               | español                              | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota                        |   |
|------------|--------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|------------------------------------------------------------------------|--------------------------------------|---|
| 16.<br>(+) | Leaf blade: depth of lobes           | Limbe: profondeur des lobes           | Blattspreite: Tiefe der Lappen        | Limbo: profundidad de los lóbulos    |                                                                        |                                      |   |
| QN         | (c)                                  | shallow                               | peu profonds                          | flach                                | poco profunda                                                          | Stipulacea                           | 3 |
|            |                                      | medium                                | moyens                                | mittel                               | media                                                                  | Punicea                              | 5 |
|            |                                      | deep                                  | profonds                              | tief                                 | profunda                                                               | Major, Toba                          | 7 |
| 17.        | Leaf blade: variegation              | Limbe: panachure                      | Blattspreite: Panaschierung           | Limbo: variegación                   |                                                                        |                                      |   |
| QL         | (d)                                  | absent                                | absente                               | fehlend                              | ausente                                                                | Carrieri                             | 1 |
|            |                                      | present                               | présente                              | vorhanden                            | presente                                                               | Gireoudii                            | 9 |
| 18.        | Leaf blade: anthocyanin coloration   | Limbe: pigmentation anthocyanique     | Blattspreite: Anthocyanfärbung        | Limbo: pigmentación antociánica      |                                                                        |                                      |   |
| QN         | (c)                                  | absent or weak                        | absente ou faible                     | fehlend oder gering                  | ausente o débil                                                        |                                      | 1 |
|            |                                      | medium                                | moyenne                               | mittel                               | media                                                                  |                                      | 2 |
|            |                                      | strong                                | forte                                 | stark                                | fuerte                                                                 |                                      | 3 |
| 19.        | Leaf blade: glossiness               | Limbe: brillance                      | Blattspreite: Glanz                   | Limbo: brillo                        |                                                                        |                                      |   |
| QN         | (c)                                  | absent or weak                        | absente ou faible                     | fehlend oder gering                  | ausente o débil                                                        | Tzapingo                             | 1 |
|            |                                      | medium                                | moyenne                               | mittel                               | medio                                                                  | Mago, Nitida                         | 2 |
|            |                                      | strong                                | forte                                 | stark                                | fuerte                                                                 | Carrierei                            | 3 |
| 20.<br>(+) | Leaf blade: pubescence on upper side | Limbe: pilosité de la face supérieure | Blattspreite: Behaarung der Oberseite | Limbo: pubescencia del lado superior |                                                                        |                                      |   |
| QL         | (c)                                  | absent                                | absente                               | fehlend                              | ausente                                                                | Calpantino, Toba                     | 1 |
|            |                                      | present                               | présente                              | vorhanden                            | presente                                                               | Calpan Gold, Chapeado, Erick (Major) | 9 |
| 21.        | Leaf blade: surface                  | Limbe: surface                        | Blattspreite: Oberfläche              | Limbo: superficie                    |                                                                        |                                      |   |
| QL         | (c)                                  | smooth                                | lisse                                 | glatt                                | lisa                                                                   | Aby, Toba                            | 1 |
|            |                                      | wrinkled                              | ridée                                 | runzlig                              | arrugada                                                               | Chela, Flexuosa                      | 2 |

|                    | English                       | français                            | Deutsch                              | español                            | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|--------------------|-------------------------------|-------------------------------------|--------------------------------------|------------------------------------|------------------------------------------------------------------------|---------------|
| <b>22.<br/>(*)</b> | <b>Petiole: length</b>        | <b>Pétiole: longueur</b>            | <b>Blattstiel: Länge</b>             | <b>Pecíolo: longitud</b>           |                                                                        |               |
| <b>QN (c)</b>      | short                         | court                               | kurz                                 | corta                              | Tzapingo                                                               | 3             |
|                    | medium                        | moyen                               | mittel                               | media                              | Paul's Scarlet, Plena                                                  | 5             |
|                    | long                          | long                                | lang                                 | larga                              | Toba, Wattiana                                                         | 7             |
| <b>23.<br/>(+)</b> | <b>Flower: calyx length</b>   | <b>Fleur: longueur du calice</b>    | <b>Blüte: Länge des Kelches</b>      | <b>Flor: longitud del cáliz</b>    |                                                                        |               |
| <b>QN (d)</b>      | short                         | court                               | kurz                                 | corta                              | Alex                                                                   | 3             |
|                    | medium                        | moyen                               | mittel                               | media                              | San José                                                               | 5             |
|                    | long                          | long                                | lang                                 | larga                              | Lupita                                                                 | 7             |
| <b>24.<br/>(*)</b> | <b>Flower: pedicel length</b> | <b>Fleur: longueur du pédoncule</b> | <b>Blüte: Länge des Blütenstiels</b> | <b>Flor: longitud del pedicelo</b> |                                                                        |               |
| <b>QN (d)</b>      | short                         | court                               | kurz                                 | corta                              | Alex                                                                   | 3             |
|                    | medium                        | moyen                               | mittel                               | media                              | Cris                                                                   | 5             |
|                    | long                          | long                                | lang                                 | larga                              | San José                                                               | 7             |
| <b>25.<br/>(+)</b> | <b>Flower: type</b>           | <b>Fleur: type</b>                  | <b>Blüte: Typ</b>                    | <b>Flor: tipo</b>                  |                                                                        |               |
| <b>QL (d)</b>      | single                        | simple                              | einfach                              | simple                             | Carrieri, Edgar, Gloria, Punicea                                       | 1             |
|                    | double                        | double                              | gefüllt                              | doble                              | Masekii, Paul's Scarlet                                                | 2             |
| <b>26.<br/>(+)</b> | <b>Flower: diameter</b>       | <b>Fleur: diamètre</b>              | <b>Blüte: Durchmesser</b>            | <b>Flor: diámetro</b>              |                                                                        |               |
| <b>QN (d)</b>      | small                         | petit                               | klein                                | pequeño                            | Aby, Poblano                                                           | 3             |
|                    | medium                        | moyen                               | mittel                               | medio                              | Chela, Pingo                                                           | 5             |
|                    | large                         | grand                               | groß                                 | grande                             | Superior, Tequex                                                       | 7             |

|               | English                                       | français                                                     | Deutsch                                                       | español                                                        | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|---------------|-----------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------|------------------------------------------------------------------------|---------------|
| <b>27.</b>    | <b>Flower: color of petals</b>                | <b>Fleur: couleur des pétales</b>                            | <b>Blüte: Farbe der Blütenblätter</b>                         | <b>Flor: color de los pétalos</b>                              |                                                                        |               |
| <b>PQ (d)</b> | white                                         | blanche                                                      | weiß                                                          | blanco                                                         | Chapeada, Chela, Plena                                                 | 1             |
|               | light pink                                    | rose clair                                                   | hellrosa                                                      | rosa claro                                                     | Masekii, Toba                                                          | 2             |
|               | medium pink                                   | rose moyen                                                   | mittelrosa                                                    | rosa medio                                                     | Pink Corkscrew, Rubra Plena                                            | 3             |
|               | dark pink                                     | rose foncée                                                  | dunkelrosa                                                    | rosa oscuro                                                    |                                                                        | 4             |
|               | red                                           | rouge                                                        | rot                                                           | rojo                                                           | Paul's Scarlet                                                         | 5             |
| <b>28.</b>    | <b>Flower: shape of anther</b>                | <b>Fleur: forme des anthères</b>                             | <b>Blüte: Form der Anthere</b>                                | <b>Flor: forma de la antera</b>                                |                                                                        |               |
| <b>(+)</b>    |                                               |                                                              |                                                               |                                                                |                                                                        |               |
| <b>PQ (d)</b> | circular                                      | rondes                                                       | kreisförmig                                                   | circular                                                       | Betty                                                                  | 1             |
|               | elliptic                                      | elliptiques                                                  | elliptisch                                                    | elíptica                                                       | Aby, San José                                                          | 2             |
|               | ovate                                         | ovales                                                       | eiförmig                                                      | oval                                                           | Carla                                                                  | 3             |
| <b>29.</b>    | <b>Flower: color of base of anther stalks</b> | <b>Fleur: couleur de la base des pédoncules des anthères</b> | <b>Blüte: Farbe des Unterteils der Filamente der Antheren</b> | <b>Flor: color de la base de los filamentos de las anteras</b> |                                                                        |               |
| <b>PQ (d)</b> | green                                         | verte                                                        | grün                                                          | verde                                                          | Poblano, Superior                                                      | 1             |
|               | yellow                                        | jaune                                                        | gelb                                                          | amarilla                                                       | Edgar, Gloria                                                          | 2             |
|               | pink                                          | rose                                                         | rosa                                                          | rosa                                                           | Centenario                                                             | 3             |
|               | red pink                                      | rosée                                                        | rotrosa                                                       | rosa rojizo                                                    | San José                                                               | 4             |
|               | medium purple                                 | pourpre moyenne                                              | mittelpurpurn                                                 | púrpura medio                                                  | Chela                                                                  | 5             |
|               | dark purple                                   | pourpre foncé                                                | dunkelpurpurn                                                 | púrpura oscuro                                                 | San Cristóbal                                                          | 6             |
|               | brown                                         | brune                                                        | braun                                                         | marrón                                                         | Tempranero, Teques                                                     | 7             |
| <b>30.</b>    | <b>Flower: attitude of petals</b>             | <b>Fleur: port des pétales</b>                               | <b>Blüte: Haltung der Blütenblätter</b>                       | <b>Flor: porte de los pétalos</b>                              |                                                                        |               |
| <b>(+)</b>    |                                               |                                                              |                                                               |                                                                |                                                                        |               |
| <b>QN (d)</b> | erect                                         | dressé                                                       | aufrecht                                                      | erecto                                                         | Poblano, Tempranero                                                    | 1             |
|               | semi erect                                    | demi-dressé                                                  | halbaufrecht                                                  | semierecto                                                     | Chela                                                                  | 2             |
|               | horizontal                                    | horizontal                                                   | waagerecht                                                    | horizontal                                                     | Edgar, Pingo, Superior                                                 | 3             |

|                    | English                                                                                      | français                                                                      | Deutsch                                                                                    | español                                                                                         | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|--------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------|
| <b>31.<br/>(+)</b> | <b><u>Only varieties with flower type: single:</u><br/>Flower:<br/>arrangement of petals</b> | <b><u>Variétés à capitule: simple:</u> Fleur:<br/>disposition des pétales</b> | <b><u>Nur Sorten mit einfachem Blütenstand:</u> Blüte:<br/>Anordnung der Blütenblätter</b> | <b><u>Sólo variedades con capítulo tipo: sencillo:</u> Flor:<br/>disposición de los pétalos</b> |                                                                        |               |
| <b>QN (d)</b>      | free                                                                                         | ouverts                                                                       | freistehend                                                                                | libre                                                                                           | Edgar, Superior                                                        | 1             |
|                    | touching                                                                                     | tangents                                                                      | sich berührend                                                                             | en contacto                                                                                     | Natzi                                                                  | 2             |
|                    | overlapping                                                                                  | se recouvrant                                                                 | überlappend                                                                                | solapados                                                                                       | San Cristóbal                                                          | 3             |
| <b>32.<br/>(*)</b> | <b>Fruit: color</b>                                                                          | <b>Fruit: couleur</b>                                                         | <b>Frucht: Farbe</b>                                                                       | <b>Fruto: color</b>                                                                             |                                                                        |               |
| <b>PQ (e)</b>      | light green                                                                                  | vert clair                                                                    | hellgrün                                                                                   | verde claro                                                                                     | Epi, San Nicolás                                                       | 1             |
|                    | medium green                                                                                 | vert moyen                                                                    | mittelgrün                                                                                 | verde medio                                                                                     |                                                                        | 2             |
|                    | yellow                                                                                       | jaune                                                                         | gelb                                                                                       | amarillo                                                                                        | Aurora, Tzapingo                                                       | 3             |
|                    | yellow and orange                                                                            | jaune et orange                                                               | gelb und orange                                                                            | amarillo y naranja                                                                              | Alex, Chapeado                                                         | 4             |
|                    | yellow and red                                                                               | jaune et rouge                                                                | gelb und rot                                                                               | amarillo y rojo                                                                                 | Carrierei, Elena                                                       | 5             |
|                    | orange                                                                                       | orange                                                                        | orange                                                                                     | naranja                                                                                         | Ade, Huejo                                                             | 6             |
|                    | orange and red                                                                               | orange et rouge                                                               | orange und rot                                                                             | naranja y rojo                                                                                  | Poblano                                                                | 7             |
|                    | medium red                                                                                   | rouge moyen                                                                   | mittelrot                                                                                  | rojo medio                                                                                      | Ara                                                                    | 8             |
|                    | dark red                                                                                     | rouge foncé                                                                   | dunkelrot                                                                                  | rojo oscuro                                                                                     | Eli                                                                    | 9             |
|                    | purple                                                                                       | pourpre                                                                       | purpurn                                                                                    | púrpura                                                                                         |                                                                        | 10            |
|                    | black                                                                                        | noir                                                                          | schwarz                                                                                    | negro                                                                                           |                                                                        | 11            |
| <b>33.<br/>(*)</b> | <b>Fruit: glossiness of skin</b>                                                             | <b>Fruit: brillance de la peau</b>                                            | <b>Frucht: Glanz der Haut</b>                                                              | <b>Fruto: brillo de la epidermis</b>                                                            |                                                                        |               |
| <b>QL (e)</b>      | absent                                                                                       | absente                                                                       | fehlend                                                                                    | ausente                                                                                         | Cas, Eli                                                               | 1             |
|                    | present                                                                                      | présente                                                                      | vorhanden                                                                                  | presente                                                                                        | Ara                                                                    | 9             |

|               | English                            | français                              | Deutsch                                   | español                                | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|---------------|------------------------------------|---------------------------------------|-------------------------------------------|----------------------------------------|------------------------------------------------------------------------|---------------|
| <b>34.</b>    | <b>Fruit: density of lenticels</b> | <b>Fruit: densité des lenticelles</b> | <b>Frucht: Dichte der Lentizellen</b>     | <b>Fruto: densidad de lenticelas</b>   |                                                                        |               |
| <b>QN (e)</b> | very sparse                        | très lâche                            | sehr locker                               | muy baja                               | Robelo                                                                 | 1             |
|               | sparse                             | lâche                                 | locker                                    | baja                                   | Mago                                                                   | 3             |
|               | medium                             | moyenne                               | mittel                                    | media                                  |                                                                        | 5             |
|               | dense                              | dense                                 | dicht                                     | alta                                   | Iracema                                                                | 7             |
|               | very dense                         | très dense                            | sehr dicht                                | muy alta                               | Paola                                                                  | 9             |
| <b>35.</b>    | <b>Fruit: texture of surface</b>   | <b>Fruit: texture de la surface</b>   | <b>Frucht: Textur der Oberfläche</b>      | <b>Fruto: textura de la superficie</b> |                                                                        |               |
| <b>QN (e)</b> | smooth or slightly rough           | lisse ou légèrement rugueuse          | glatt oder leicht blasig                  | lisa o ligeramente rugosa              | Dany                                                                   | 1             |
|               | moderately rough                   | modérément rugueuse                   | mäßig blasig                              | moderadamente rugosa                   | San Nicolás                                                            | 2             |
|               | very rough                         | très rugueuse                         | sehr blasig                               | muy rugosa                             | Tzingo                                                                 | 3             |
| <b>36.</b>    | <b>Fruit: aroma</b>                | <b>Fruit: arôme</b>                   | <b>Frucht: Aroma</b>                      | <b>Fruto: aroma</b>                    |                                                                        |               |
| <b>QN (e)</b> | absent or weak                     | absent ou faible                      | fehlend oder gering                       | ausente o débil                        | Chela                                                                  | 1             |
|               | medium                             | moyen                                 | mittel                                    | medio                                  | Elvia                                                                  | 2             |
|               | strong                             | fort                                  | stark                                     | fuerte                                 | Orem                                                                   | 3             |
| <b>37.</b>    | <b>Fruit: general shape</b>        | <b>Fruit: forme générale</b>          | <b>Frucht: allgemeine Form</b>            | <b>Fruto: forma general</b>            |                                                                        |               |
| <b>(+)</b>    |                                    |                                       |                                           |                                        |                                                                        |               |
| <b>PQ (e)</b> | conical                            | conique                               | kegelförmig                               | cónica                                 | Ela                                                                    | 1             |
|               | elliptic                           | elliptique                            | elliptisch                                | elíptica                               | Santa Cata                                                             | 2             |
|               | circular                           | circulaire                            | kreisförmig                               | circular                               | Pingo                                                                  | 3             |
|               | oblate                             | aplati                                | breitrund                                 | achatada                               | Dany                                                                   | 4             |
|               | obovate                            | obovale                               | verkehrt eiförmig                         | oboval                                 | Erick (Pedillelata)                                                    | 5             |
| <b>38.</b>    | <b>Fruit: presence of neck</b>     | <b>Fruit : présence du collet</b>     | <b>Frucht: Vorhandensein eines Halses</b> | <b>Fruto: cuello</b>                   |                                                                        |               |
| <b>(+)</b>    |                                    |                                       |                                           |                                        |                                                                        |               |
| <b>QL (e)</b> | absent                             | absent                                | fehlend                                   | ausente                                | Carla                                                                  | 1             |
|               | present                            | présent                               | vorhanden                                 | presente                               | Lupita                                                                 | 9             |

|            | English                           | français                                        | Deutsch                                | español                                         | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|------------|-----------------------------------|-------------------------------------------------|----------------------------------------|-------------------------------------------------|------------------------------------------------------------------------|---------------|
| <b>39.</b> | <b>Fruit: length</b>              | <b>Fruit: longueur</b>                          | <b>Frucht: Länge</b>                   | <b>Fruto: longitud</b>                          |                                                                        |               |
| <b>(+)</b> |                                   |                                                 |                                        |                                                 |                                                                        |               |
| <b>QN</b>  | <b>(e)</b>                        |                                                 |                                        |                                                 |                                                                        |               |
|            | short                             | court                                           | kurz                                   | corta                                           | Dany, Tzapingo                                                         | 3             |
|            | medium                            | moyen                                           | mittel                                 | media                                           | Epi                                                                    | 5             |
|            | long                              | long                                            | lang                                   | larga                                           | Calpan Gold                                                            | 7             |
| <b>40.</b> | <b>Fruit: width</b>               | <b>Fruit: largeur</b>                           | <b>Frucht: Breite</b>                  | <b>Fruto: anchura</b>                           |                                                                        |               |
| <b>QN</b>  | <b>(e)</b>                        |                                                 |                                        |                                                 |                                                                        |               |
|            | narrow                            | étroit                                          | schmal                                 | estrecha                                        | Yesenia                                                                | 3             |
|            | medium                            | moyen                                           | mittel                                 | media                                           | Tequex                                                                 | 5             |
|            | broad                             | large                                           | breit                                  | ancha                                           | Carla                                                                  | 7             |
| <b>41.</b> | <b>Fruit: length/width ratio</b>  | <b>Fruit: rapport longueur/largeur</b>          | <b>Frucht: Verhältnis Länge/Breite</b> | <b>Fruto: relación longitud/anchura</b>         |                                                                        |               |
| <b>(*)</b> |                                   |                                                 |                                        |                                                 |                                                                        |               |
| <b>QN</b>  | <b>(e)</b>                        |                                                 |                                        |                                                 |                                                                        |               |
|            | small                             | petit                                           | klein                                  | pequeña                                         | Ela                                                                    | 3             |
|            | medium                            | moyen                                           | mittel                                 | media                                           | Erick, Robelo                                                          | 5             |
|            | large                             | grand                                           | groß                                   | grande                                          | Alex, Natzi                                                            | 7             |
| <b>42.</b> | <b>Fruit: cavity of eye basin</b> | <b>Fruit : cavité de la cuvette de l'œil</b>    | <b>Frucht: Kelchgrube</b>              | <b>Fruto: cavidad del ojo</b>                   |                                                                        |               |
| <b>(+)</b> |                                   |                                                 |                                        |                                                 |                                                                        |               |
| <b>QL</b>  | <b>(e)</b>                        |                                                 |                                        |                                                 |                                                                        |               |
|            | closed                            | fermée                                          | geschlossen                            | cerrada                                         | Dany, Robelo                                                           | 1             |
|            | open                              | ouverte                                         | offen                                  | abierta                                         | Karen                                                                  | 2             |
| <b>43.</b> | <b>Fruit: depth of eye basin</b>  | <b>Fruit: profondeur de la cuvette de l'œil</b> | <b>Frucht: Tiefe der Kelchgrube</b>    | <b>Fruto: profundidad de la cavidad del ojo</b> |                                                                        |               |
| <b>(+)</b> |                                   |                                                 |                                        |                                                 |                                                                        |               |
| <b>QN</b>  | <b>(e)</b>                        |                                                 |                                        |                                                 |                                                                        |               |
|            | very shallow                      | très peu profonde                               | sehr flach                             | muy poco profunda                               | Candelaria, Mago                                                       | 1             |
|            | shallow                           | peu profonde                                    | flach                                  | poco profunda                                   | Rob                                                                    | 3             |
|            | medium                            | moyenne                                         | mittel                                 | media                                           | Gloria                                                                 | 5             |
|            | deep                              | profonde                                        | tief                                   | profunda                                        | Chapeado                                                               | 7             |
|            | very deep                         | très profonde                                   | sehr tief                              | muy profunda                                    | Elvia                                                                  | 9             |

|                          | English                           | français                                     | Deutsch                                 | español                                   | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|--------------------------|-----------------------------------|----------------------------------------------|-----------------------------------------|-------------------------------------------|------------------------------------------------------------------------|---------------|
| <b>44.</b><br><b>(+)</b> | <b>Fruit: main color of flesh</b> | <b>Fruit: couleur principale de la chair</b> | <b>Frucht: Hauptfarbe des Fleisches</b> | <b>Fruto: color principal de la pulpa</b> |                                                                        |               |
| <b>PQ (e)</b>            | green                             | verte                                        | grün                                    | verde                                     | San Nicolás                                                            | 1             |
|                          | white                             | blanche                                      | weiß                                    | blanco                                    | Epi                                                                    | 2             |
|                          | light yellow                      | jaune clair                                  | hellgelb                                | amarillo claro                            | Superior                                                               | 3             |
|                          | medium yellow                     | jaune moyen                                  | mittelgelb                              | amarillo medio                            | Belén                                                                  | 4             |
|                          | dark yellow                       | jaune foncé                                  | dunkelgelb                              | amarillo oscuro                           | Azucena                                                                | 5             |
|                          | orange                            | orange                                       | orange                                  | naranja                                   | Chela, Cris, Poblano                                                   | 6             |
|                          | red                               | rouge                                        | rot                                     | rojo                                      | Dany                                                                   | 7             |
| <b>45.</b><br><b>(e)</b> | <b>Endocarp: number</b>           | <b>Endocarpe: nombre</b>                     | <b>Endokarp: Anzahl</b>                 | <b>Endocarpo: número</b>                  |                                                                        |               |
| <b>QN</b>                | few                               | faible                                       | gering                                  | bajo                                      | Natzi, Santa Cata                                                      | 1             |
|                          | medium                            | moyen                                        | mittel                                  | medio                                     | Edgar                                                                  | 2             |
|                          | many                              | élevé                                        | groß                                    | alto                                      | Centenario                                                             | 3             |
| <b>46.</b><br><b>(+)</b> | <b>Endocarp: length</b>           | <b>Endocarpe: longueur</b>                   | <b>Endokarp: Länge</b>                  | <b>Endocarpo: longitud</b>                |                                                                        |               |
| <b>QN (e)</b>            | short                             | court                                        | kurz                                    | corta                                     | Pingo                                                                  | 3             |
|                          | medium                            | moyen                                        | mittel                                  | media                                     | Natzi                                                                  | 5             |
|                          | long                              | long                                         | lang                                    | larga                                     | Chela                                                                  | 7             |
| <b>47.</b><br><b>(+)</b> | <b>Endocarp: width</b>            | <b>Endocarpe: largeur</b>                    | <b>Endokarp: Breite</b>                 | <b>Endocarpo: anchura</b>                 |                                                                        |               |
| <b>QN (e)</b>            | narrow                            | étroit                                       | schmal                                  | estrecha                                  | Ade                                                                    | 3             |
|                          | medium                            | moyen                                        | mittel                                  | media                                     | San Cristóbal                                                          | 5             |
|                          | broad                             | large                                        | breit                                   | ancha                                     | Carla                                                                  | 7             |

|                    | English                                 | français                                       | Deutsch                                          | español                                             | Example Varieties<br>Exemples<br>Beispielssorten<br>Variedades ejemplo | Note/<br>Nota |
|--------------------|-----------------------------------------|------------------------------------------------|--------------------------------------------------|-----------------------------------------------------|------------------------------------------------------------------------|---------------|
| <b>48.<br/>(*)</b> | <b>Endocarp:<br/>width/length ratio</b> | <b>Endocarpe: rapport<br/>longueur/largeur</b> | <b>Endokarp:<br/>Verhältnis<br/>Länge/Breite</b> | <b>Endocarpo:<br/>relación<br/>longitud/anchura</b> |                                                                        |               |
| <b>QN (e)</b>      | small                                   | petit                                          | klein                                            | pequeña                                             | Belén, Lila, Yesenia                                                   | 3             |
|                    | medium                                  | moyen                                          | mittel                                           | media                                               | Calpar, Candelaria,<br>Yash                                            | 5             |
|                    | large                                   | grand                                          | groß                                             | grande                                              | Ixayoc                                                                 | 7             |
| <b>49.</b>         | <b>Time of flowering</b>                | <b>Époque de<br/>floraison</b>                 | <b>Zeitpunkt der Blüte</b>                       | <b>Época de la<br/>floración</b>                    |                                                                        |               |
| <b>QN</b>          | early                                   | précoce                                        | früh                                             | temprana                                            | Eli                                                                    | 3             |
|                    | medium                                  | moyenne                                        | mittel                                           | media                                               | Centenario                                                             | 5             |
|                    | late                                    | tardive                                        | spät                                             | tardía                                              | Chapeado                                                               | 7             |
| <b>50.</b>         | <b>Time of harvest</b>                  | <b>Époque de récolte</b>                       | <b>Zeitpunkt der Ernte</b>                       | <b>Época de cosecha</b>                             |                                                                        |               |
| <b>QN</b>          | very early                              | très précoce                                   | sehr früh                                        | muy temprana                                        | Tempranero                                                             | 1             |
|                    | early                                   | précoce                                        | früh                                             | temprana                                            | Adela                                                                  | 3             |
|                    | medium                                  | moyenne                                        | mittel                                           | media                                               | Ara, Mago                                                              | 5             |
|                    | late                                    | tardive                                        | spät                                             | tardía                                              | Nati                                                                   | 7             |
|                    | very late                               | très tardive                                   | sehr spät                                        | muy tardía                                          | Mitzi                                                                  | 9             |

## 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 on the plant stem and branch which should be made on the vegetative current season's shoots after growth.
- (b) Observations on the plant which should be made on foliated plants in the spring.
- (c) Leaf: Observations on the leaf should be made on mature leaves from branches on the outside of the tree which are neither bearing fruit nor showing signs of new flush. Leaves should be taken from the middle third of the current season's growth.
- (d) Flower: Observations on the flower which should be made during the first flower opening, at the start of anther dehiscence.
- (e) Fruit and endocarp: Observations on the fruit and endocarp which should be made on 10 typical fruits taken from each plant, at the time of fruit ripening.

### 8.2 *Explanations for individual characteristics*

#### Ad. 1: Plant: growth type



1  
shrub



2  
semi-shrub



3  
tree

Shrub: multiple stems arising close to the grafting point, relatively low height.

Semi-shrub: multiple stems arising generally from the same point but not close to the graft point, with a main stem, not tall.

Tree: having a main trunk, with branches arising from different points and usually a distinct crown.

Ad. 2: Plant: habit



1  
fastigate



2  
upright



3  
spreading



4  
semi drooping



5  
drooping



6  
weeping

Ad. 3: Plant: shape of canopy



1  
semi-circular



2  
ovate



3  
oblong



4  
circular



5  
transverse elliptic



6  
obovate

Ad. 14: Leaf blade: margin



1  
entire



2  
crenate



3  
bicrenate



4  
serrate



5  
biserrate

Ad. 15: Leaf blade: lobes

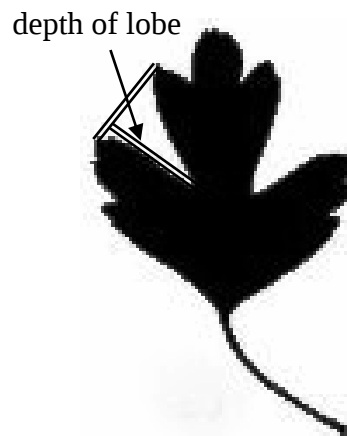


1  
absent



9  
present

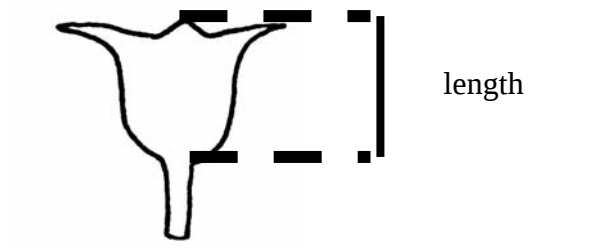
Ad. 16: Leaf blade: depth of lobes



Ad. 20: Leaf blade: pubescence on upper side

Pubescence should be observed with the aid of a magnifying glass.

Ad. 23: Flower: calyx length



Ad. 25: Flower type

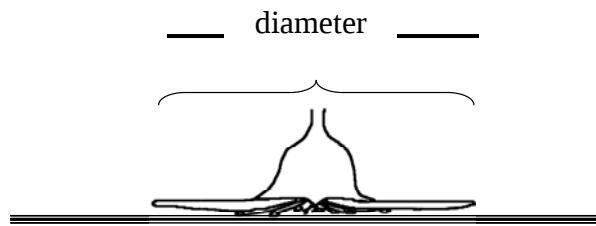


1  
single



2  
double

Ad. 26: Flower: diameter



The flower diameter should be observed with the petals pressed into a horizontal position.

Ad. 28: Flower: shape of anther



1  
circular

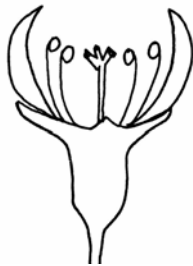


2  
elliptic



3  
ovate

Ad. 30: Flower: attitude of petals



1  
erect



2  
semi erect



3  
horizontal

Ad. 31: Only varieties with flower type: single: Flower: arrangement of petals



1  
free

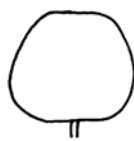


2  
touching



3  
overlapping

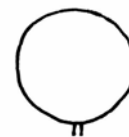
Ad. 37: Fruit: general shape



1  
conical



2  
elliptic



3  
circular

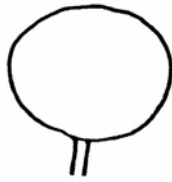


4  
oblate



5  
obovate

Ad. 38: Fruit: presence of neck



1  
absent



9  
present

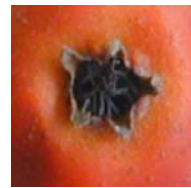
Ad. 39: Fruit: length

The length of fruit includes the neck (if present).

Ad. 42: Fruit: cavity of eye basin



1  
closed



2  
open

Ad. 43: Fruit: depth of eye basin

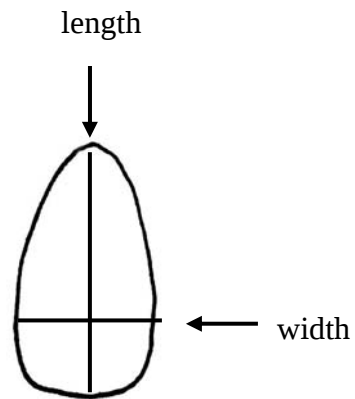


Ad. 44: Fruit: main color of flesh

The main color is the color with the largest surface area.

Ad. 46: Endocarp: length

Ad. 47: Endocarp: width



9. Literature

Borys, M. W., Leszczyńska-Borys, H., 1994: Tejocote (*Crataegus* spp.) – planta para solares, macetas e interiores. Revista Chapingo Serie Horticultura 1(2): 95-107.

Hillier, H.G., 1992: Hillier's Manual of Trees and Shrubs. 6<sup>th</sup> ed. Romsey, GB, 575 pp.

Phipps, J.B., 1997: Monography of Northern Mexican *Crataegus* (Rosaceae, subfam. Maloideae). The University of Western Ontario, Department of Plant Science, London, Ontario, CA, 93 pp.

10. Technical Questionnaire

|                                                                                                         |                           |                                                             |
|---------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------------------------------------|
| TECHNICAL QUESTIONNAIRE                                                                                 | Page {x} of {y}           | Reference Number:                                           |
|                                                                                                         |                           | Application date:<br>(not to be filled in by the applicant) |
| TECHNICAL QUESTIONNAIRE<br>to be completed in connection with an application for plant breeders' rights |                           |                                                             |
| 1. Subject of the Technical Questionnaire                                                               |                           |                                                             |
| 1.1                                                                                                     | Botanical name            | <input type="text" value="Crataegus L."/>                   |
| 1.2                                                                                                     | Common Name               | <input type="text" value="Hawthorn"/>                       |
|                                                                                                         | Species (please complete) | <input type="text"/>                                        |
| 2. Applicant                                                                                            |                           |                                                             |
| Name                                                                                                    | <input type="text"/>      |                                                             |
| Address                                                                                                 | <input type="text"/>      |                                                             |
| Telephone No.                                                                                           | <input type="text"/>      |                                                             |
| Fax No.                                                                                                 | <input type="text"/>      |                                                             |
| E-mail address                                                                                          | <input type="text"/>      |                                                             |
| Breeder (if different from applicant)                                                                   | <input type="text"/>      |                                                             |
| 3. Proposed denomination and breeder's reference                                                        |                           |                                                             |
| Proposed denomination<br>(if available)                                                                 | <input type="text"/>      |                                                             |
| Breeder's reference                                                                                     | <input type="text"/>      |                                                             |

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

4.2 Method of propagating the variety

4.2.1 Vegetative

- (a) grafted [ ]
- (b) shoot cuttings [ ]
- (c) root cuttings [ ]

---

# Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| 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>5.1 Plant: growth type<br/>(1)</b>        |                                         |      |
| shrub                                        | Calpantino, Candelaria, Compacta, Mitzi | 1[ ] |
| semi-shrub                                   | Azucena, Paul's Scarlet                 | 2[ ] |
| tree                                         | Calpan Gold, Plena                      | 3[ ] |
| <b>5.2 Plant: habit<br/>(2)</b>              |                                         |      |
| fastigate                                    | Ergo, Gaca, Pingo                       | 1[ ] |
| upright                                      | Azucena, Calpar, Stricta                | 2[ ] |
| spreading                                    | Atexcac                                 | 3[ ] |
| semi drooping                                | Candelaria, Chico                       | 4[ ] |
| drooping                                     |                                         | 5[ ] |
| weeping                                      | Pendula                                 | 6[ ] |
| <b>5.3 Shoot: presence of thorns<br/>(6)</b> |                                         |      |
| absent                                       | Compacta, Edgar, Epi                    | 1[ ] |
| present                                      | Chela, Mutabilis, Pingo                 | 9[ ] |
| <b>5.4 Leaf blade: length<br/>(11)</b>       |                                         |      |
| short                                        | Belén, Mutabilis                        | 3[ ] |
| medium                                       | Epi                                     | 5[ ] |
| long                                         | Carrierei, Edgar                        | 7[ ] |

| TECHNICAL QUESTIONNAIRE   |                                  | Page {x} of {y}       | Reference Number: |
|---------------------------|----------------------------------|-----------------------|-------------------|
|                           | Characteristics                  | Example Varieties     | Note              |
| <b>5.5</b><br><b>(22)</b> | <b>Petiole: length</b>           |                       |                   |
|                           | short                            | Tzapingo              | 3[ ]              |
|                           | medium                           | Paul's Scarlet, Plena | 5[ ]              |
|                           | long                             | Toba, Wattiana        | 7[ ]              |
| <b>5.6</b><br><b>(32)</b> | <b>Fruit: color</b>              |                       |                   |
|                           | light green                      | Epi, San Nicolás      | 1[ ]              |
|                           | medium green                     |                       | 2[ ]              |
|                           | yellow                           | Aurora, Tzapingo      | 3[ ]              |
|                           | yellow and orange                | Alex, Chapeado        | 4[ ]              |
|                           | yellow and red                   | Carrierei, Elena      | 5[ ]              |
|                           | orange                           | Ade, Huejo            | 6[ ]              |
|                           | orange and red                   | Poblano               | 7[ ]              |
|                           | medium red                       | Ara                   | 8[ ]              |
|                           | dark red                         | Eli                   | 9[ ]              |
|                           | purple                           |                       | 10[ ]             |
|                           | black                            |                       | 11[ ]             |
| <b>5.7</b><br><b>(41)</b> | <b>Fruit: length/width ratio</b> |                       |                   |
|                           | small                            | Ela                   | 3[ ]              |
|                           | medium                           | Erick, Robelo         | 5[ ]              |
|                           | large                            | Alex, Natzi           | 7[ ]              |

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| 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>Leaf blade: lobes</i>                                                                | <i>note 1<br/>absent</i>                                                             | <i>note 9<br/>present</i>                                                          |
|                                                                   |                                                                                         |                                                                                      |                                                                                    |
|                                                                   |                                                                                         |                                                                                      |                                                                                    |
|                                                                   |                                                                                         |                                                                                      |                                                                                    |
|                                                                   |                                                                                         |                                                                                      |                                                                                    |

|                         |                 |                   |
|-------------------------|-----------------|-------------------|
| 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)

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

7.3.1 Type

(a) fruit [ ]

(b) ornamental [ ]

7.3.2 A representative color photograph of the variety should accompany the Technical Questionnaire

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.

#

Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

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

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 [ <input type="checkbox"/> ] | No [ <input type="checkbox"/> ] |
| (b) Chemical treatment (e.g. growth retardant, pesticide) | Yes [ <input type="checkbox"/> ] | No [ <input type="checkbox"/> ] |
| (c) Tissue culture                                        | Yes [ <input type="checkbox"/> ] | No [ <input type="checkbox"/> ] |
| (d) Other factors                                         | Yes [ <input type="checkbox"/> ] | No [ <input type="checkbox"/> ] |

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

[End of document]