|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | |  | E  TG/VANIL(proj.4)  **ORIGINAL:** English  DATE: 2013-09-10 | |
| INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS | | | | |
| Geneva | | | | |
| DRAFT | | |

|  |  |  |
| --- | --- | --- |
|  | **VANILLA**  UPOV Code VANIL\_PLA  *Vanilla planifolia* Jacks. | [[1]](#footnote-1)\* |

**GUIDELINES**

**FOR THE CONDUCT OF TESTS**

**FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

prepared by an expert from Mexico

to be considered by the

*Enlarged Editorial Committee at its meeting*

to be held in Geneva, on January 8 and 9, 2014

Alternative Names:\*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Botanical name* | *English* | *French* | *German* | *Spanish* |
| *Vanilla planifolia* Jacks. | Vanilla | Vanillier | Vanille-Pflanze | Vainilla, Xanath |

|  |
| --- |
| 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.

TABLE OF CONTENTS PAGE

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 3

3.5 Additional Tests 3

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 5

6.1 Categories of Characteristics 5

6.2 States of Expression and Corresponding Notes 6

6.3 Types of Expression 6

6.4 Example Varieties 6

6.5 Legend 7

7. Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres 8

8. Explanations on the Table of Characteristics 13

8.1 Explanations covering several characteristics 13

8.2 Explanations for individual characteristics 13

9. Literature 19

10. Technical Questionnaire 20

# Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Vanilla planifolia* Jacks. and interspecific hybrids.

# 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 cuttings with 2 nodes minimum or one year old plants.

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

10 cuttings or plants.

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.

# Method of Examination

## 3.1 Number of Growing Cycles

3.1.1 The minimum duration of tests should normally be a single growing cycle. In particular, it is essential that the plants produce a satisfactory crop of fruit in for the growing cycle.

3.1.2 The growing cycle is considered to be the period ranging from the beginning of active vegetative growth or flowering, continuing through active vegetative growth or flowering and fruit development and concluding with the harvesting of fruit.

## 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 the main fruiting period in each of the two growing years, since the species may have waves of fruiting within a year.

## 3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 10 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 Additional Tests

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

# 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.

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

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

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 2.

### 4.1.5 Method of Observation

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

MG: single measurement of a group of plants or parts of plants

MS: measurement of a number of individual plants or parts of plants

VG: visual assessment by a single observation of a group of plants or parts of plants

VS: visual assessment by observation of individual plants or parts of plants

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

“Visual” observation (V) is an observation made on the basis of the expert’s judgment. For the purposes of this document, “visual” observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

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

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

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

## 4.2 Uniformity

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

4.2.2 For the assessment of uniformity of vegetatively propagated varieties, a population standard of 1% and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 10 plants, one off-type is allowed.

## 4.3 Stability

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

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

# 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) Stem: intensity of green color (characteristic 1)

(b) Leaf blade: variegation (characteristic 12)

(c) Only varieties without variegation: Leaf blade: intensity of green color (characteristic 13)

(d) Leaf blade: shape (characteristic 20)

(e) Fruit: length (characteristic 27)

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

# Introduction to the Table of Characteristics

## 

## 6.1 Categories of Characteristics

### 6.1.1 Standard Test Guidelines Characteristics

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

### 6.1.2 Asterisked Characteristics

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

## 6.2 States of Expression and Corresponding Notes

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

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

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

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

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

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

## 6.3 Types of Expression

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

## 6.4 Example Varieties

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

## 6.5 Legend

(\*) Asterisked characteristic – see Chapter 6.1.2

QL Qualitative characteristic – see Chapter 6.3

QN Quantitative characteristic – see Chapter 6.3

PQ Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS – see Chapter 4.1.5

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

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

# Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres

|  |  | English | français | deutsch | español | Example Varieties Exemples Beispielssorten Variedades ejemplo | Note/ Nota |
| --- | --- | --- | --- | --- | --- | --- | --- |
| (\*) | VG | Stem: intensity of green color | Tige : intensité de la couleur verte | Stengel: Intensität der grünen Farbe | Tallo: intensidad del color verde |  |  |
| QN | (a) | light | claire | hell | claro | Acamaya | 1 |
|  |  | medium | moyenne | mittel | medio | Oreja de Burro, Princesa, Totonaku | 2 |
|  |  | dark | foncée | dunkel | oscuro | Amarela, Espada | 3 |
|  | VG | Stem: variegation | Tige : panachure | Stengel: Panaschierung | Tallo: variegación |  |  |
| QL | (a) | absent | absente | fehlend | ausente | Totonaku | 1 |
|  |  | present | présente | vorhanden | presente | Acamaya | 9 |
| (+) | VG | Stem: shape in cross section | Tige : forme en section transversale | Stengel: Form im Querschnitt | Tallo: forma en sección transversal |  |  |
| PQ | (a) | round | arrondie | rund | redondo | Acamaya, Totonaku | 1 |
|  |  | round to angular | arrondie à angulaire | rund bis kantig | entre redondo y angular |  | 2 |
|  |  | angular | angulaire | kantig | angular |  | 3 |
|  | VG/MS | Stem: diameter | Tige : diamètre | Stengel: Durchmesser | Tallo: diámetro |  |  |
| QN | (a) | small | petit | klein | pequeño | Acamaya, Princesa | 3 |
|  |  | medium | moyen | mittel | medio | Totonaku | 5 |
|  |  | large | grand | groß | grande | Amarela | 7 |
|  | VG/MS | Stem: internode length | Tige : longueur de l’entre-nœud | Stengel: Internodienlänge | Tallo: longitud del entrenudo |  |  |
| QN | (a) | short | court | kurz | corto | Acamaya, Princesa | 3 |
|  |  | medium | moyen | mittel | medio | Amarela, Totonaku | 5 |
|  |  | long | long | lang | largo | Oreja de Burro | 7 |
|  | VG | Stem: surface | Tige : surface | Stengel: Oberfläche | Tallo: superficie |  |  |
| QN | (a) | smooth | lisse | glatt | lisa | Acamaya, Totonaku | 1 |
|  |  | medium | moyenne | mittel | media | Amarela | 2 |
|  |  | rough | rugueuse | rauh | rugosa |  | 3 |
| (+) | VG | Stem: spots | Tige : taches | Stengel: Flecken | Tallo: punteado |  |  |
| QL | (a) | absent | absentes | fehlend | ausente | Princesa, Totonaku | 1 |
|  |  | present | présentes | vorhanden | presente | Espada, Oreja de Burro | 9 |
| (\*) (+) | VG | Leaf blade: conspicuousness of main vein | Limbe : netteté de la nervure principale | Blattspreite: Ausprägung der Hauptader | Limbo: visibilidad del nervio principal |  |  |
| QN | (a) | weak | faible | schwach | débil | Princesa, Totonaku | 1 |
|  |  | medium | moyenne | mittel | media |  | 2 |
|  |  | strong | forte | stark | fuerte |  | 3 |
| (\*) (+) | VG | Leaf blade: shape of apex | Limbe : forme du sommet | Blattspreite: Form der Spitze | Limbo: forma del ápice |  |  |
| PQ | (a) | acute | aigu | spitz | agudo | Acamaya, Oreja de Burro | 1 |
|  |  | obtuse | obtus | stumpf | obtuso | Princesa, Totonaku | 2 |
|  |  | acuminate | acuminé | zugespitzt | acuminado | Espada | 3 |
| (\*) | VG/MS | Leaf: petiole length | Feuille : longueur du pétiole | Blatt: Länge des Blattstiels | Hoja: longitud del pecíolo |  |  |
| QN | (a) | short | court | kurz | corto | Princesa | 1 |
|  |  | medium | moyen | mittel | medio | Acamaya, Totonaku | 2 |
|  |  | long | long | lang | largo |  | 3 |
| (+) | VG | Leaf blade: base | Limbe : base | Blattspreite: Basis | Limbo: base |  |  |
| QL | (a) | clasping | étreignante | umfassend | amplexicaule | Oreja de Burro, Totonaku | 1 |
|  |  | tapering | effilée | verjüngt | atenuada | Acamaya, Princesa | 2 |
| (\*) (+) | VG | Leaf blade: variegation | Limbe : panachure | Blattspreite: Panaschierung | Limbo: variegación |  |  |
| QL | (a) | absent | absente | fehlend | ausente | Oreja de Burro, Totonaku | 1 |
|  |  | present | présente | vorhanden | presente | Acamaya | 9 |
| (\*) (+) | VG | Only varieties without variegation: Leaf blade: intensity of green color | Seulement variétés sans panachure : Limbe : intensité de la couleur verte | Nur Sorten ohne Panaschierung: Blattspreite: Intensität der grünen Farbe | Solo variedades sin variegación: Limbo: intensidad del color verde |  |  |
| QN | (a) | light | claire | hell | claro | Oreja de Burro | 1 |
|  |  | medium | moyenne | mittel | medio | Totonaku | 2 |
|  |  | dark | foncée | dunkel | oscuro | Amarela | 3 |
|  | VG/MS | Leaf blade: length | Limbe : longueur | Blattspreite: Länge | Limbo: longitud |  |  |
| QN | (a) | short | court | kurz | corto | Acamaya | 3 |
|  |  | medium | moyen | mittel | medio | Princesa, Totonaku | 5 |
|  |  | long | long | lang | largo | Oreja de Burro | 7 |
|  | VG/MS | Leaf blade: width | Limbe : largeur | Blattspreite: Breite | Limbo: anchura |  |  |
| QN | (a) | narrow | étroit | schmal | estrecho | Acamaya | 3 |
|  |  | medium | moyen | mittel | medio | Princesa, Totonaku | 5 |
|  |  | broad | large | breit | ancho | Oreja de Burro | 7 |
| (+) | VG/MS | Leaf blade: length/width ratio | Limbe : rapport longueur/largeur | Blattspreite: Verhältnis Länge/Breite | Limbo: relación longitud/anchura |  |  |
| QN | (a) | low | bas | klein | baja | Amarela | 3 |
|  |  | medium | moyen | mittel | media | Oreja de Burro, Totonaku | 5 |
|  |  | high | élevé | groß | alta | Espada | 7 |
|  | VG | Leaf blade: symmetry | Limbe : symétrie | Blattspreite: Symmetrie | Limbo: simetría |  |  |
| QN | (a) | symmetric or slightly asymmetric | symétrique ou légèrement asymétrique | symmetrisch oder leicht asymmetrisch | simétrico o ligeramente asimétrico | Princesa, Totonaku | 1 |
|  |  | moderately asymmetric | modérément asymétrique | mäßig asymmetrisch | moderadamente asimétrico | Espada | 2 |
|  |  | strongly asymmetric | fortement asymétrique | stark asymmetrisch | muy asimétrico |  | 3 |
| (\*) | VG/MS | Leaf: thickness | Feuille : épaisseur | Blatt: Dicke | Hoja: grosor |  |  |
| QN | (a) | thin | mince | dünn | delgada | Acamaya | 1 |
|  |  | medium | moyenne | mittel | media | Princesa, Totonaku | 2 |
|  |  | thick | épaisse | dick | gruesa | Oreja de Burro | 3 |
| (+) | VG | Leaf blade: transversal section | Limbe : section transversale | Blattspreite: Querschnitt | Limbo: sección transversal |  |  |
| QN | (a) | flat or slightly concave | plate ou légèrement concave | flach oder leicht konkav | plano o ligeramente cóncavo | Acamaya, Totonaku | 1 |
|  |  | moderately concave | modérément concave | mäßig konkav | moderadamente cóncavo | Espada | 2 |
|  |  | strongly concave | fortement concave | stark konkav | muy cóncavo | Oreja de Burro | 3 |
| (\*) (+) | VG | Leaf blade: shape | Limbe : forme | Blattspreite: Form | Limbo: forma |  |  |
| PQ | (a) | narrow ovate | ovale étroit | schmal eiförmig | oval estrecho | Espada | 1 |
|  |  | medium ovate | ovale moyen | mittel eiförmig | oval medio |  | 2 |
|  |  | elliptic | elliptique | elliptisch | elíptico | Princesa | 3 |
|  |  | oblong | oblong | rechteckig | oblongo | Acamaya, Totonaku | 4 |
|  |  | obovate | obovale | verkehrt eiförmig | oboval | Oreja de Burro | 5 |
|  | VG/MG | **Inflorescence: number of flowers** | **Inflorescence : nombre de fleurs** | **Blütenstand: Anzahl von Blüten** | **Inflorescencia: número de flores** |  |  |
| QN | (b) | few | petit | gering | bajo | Acamaya | 3 |
|  |  | medium | moyen | mittel | medio | Oreja de Burro, Princesa | 5 |
|  |  | many | grand | hoch | alto | Totonaku | 7 |
| (+) | VG/MS | Flower: length of gynandrium | Fleur : longueur du gynandrium | Blüte: Länge der Befruchtungssäule | Flor: longitud del ginostemo |  |  |
| QN | (b) | short | court | kurz | corto |  | 1 |
|  |  | medium | moyen | mittel | medio |  | 2 |
|  |  | long | long | lang | largo |  | 3 |
|  | VG/MS | Flower: length of petals | Fleur : longueur des pétales | Blüte: Länge der Blütenblätter | Flor: longitud del los pétalos |  |  |
| QN | (b) | short | courts | kurz | cortos |  | 1 |
|  |  | medium | moyens | mittel | medios | Oreja de Burro, Totonaku | 2 |
|  |  | long | longs | lang | largos |  | 3 |
|  | VG/MS | Flower: width of petal | Fleur : largeur du pétale | Blüte: Breite des Blütenblattes | Flor: anchura de los pétalos |  |  |
| QN | (b) | narrow | étroit | schmal | estrechos |  | 1 |
|  |  | medium | moyen | mittel | medios |  | 2 |
|  |  | broad | large | breit | anchos |  | 3 |
| (+) | VG | Fruit: shape | Fruit : forme | Frucht: Form | Fruto: forma |  |  |
| PQ | (c) | ovate | ovale | eiförmig | oval |  | 1 |
|  |  | oblong | oblong | rechteckig | oblongo | Totonaku | 2 |
|  |  | obovate | obovale | verkehrt eiförmig | oboval | Amarela | 3 |
| (+) | VG | Fruit: transversal section shape | Fruit : forme en section transversale | Frucht: Form des Querschnitts | Fruto: forma en sección transversal |  |  |
| PQ | (c) | triangular | triangulaire | dreieickig | triangular | Amarela | 1 |
|  |  | broad ovate | ovale large | breit eiförmig | oval ancho |  | 2 |
|  |  | medium ovate | ovale moyen | mittel eiförmig | oval medio |  | 3 |
|  |  | trullate | trullé | rautenförmig | en forma de llana |  | 4 |
|  |  | circular | circulaire | rund | circular |  | 5 |
|  |  | elliptic | elliptique | elliptisch | elíptico |  | 6 |
| (\*) | VG/MS | Fruit: length | Fruit : longueur | Frucht: Länge | Fruto: longitud |  |  |
| QN | (c) | short | court | kurz | corto | Acamaya | 3 |
|  |  | medium | moyen | mittel | medio | Totonaku | 5 |
|  |  | long | long | lang | largo | Amarela | 7 |
|  | VG | Fruit: grooves | Fruit : cannelures | Frucht: Riefen | Fruto: surcos |  |  |
| QN | (c) | absent or slightly visible | absentes ou légèrement visibles | fehlend oder kaum sichtbar | ausentes o poco visibles | Oreja de Burro, Princesa, Totonaku | 1 |
|  |  | moderately visible | modérément visibles | mäßig sichtbar | moderadamente visibles |  | 2 |
|  |  | clearly visible | clairement visibles | deutlich sichtbar | muy visibles |  | 3 |
| (+) | MS | Fruit: vanillin content | Fruit : teneur en vanilline | Frucht: Vanillingehalt | Fruto: contenido de vainillina |  |  |
| QN | (c) | very low | très faible | sehr gering | muy bajo | Parahurahu | 1 |
|  |  | low | faible | gering | bajo | Tahiti | 3 |
|  |  | medium | moyenne | mittel | medio | Ordinaire | 5 |
|  |  | high | forte | hoch | alto |  | 7 |
|  |  | very high | très forte | sehr hoch | muy alto | Manitra amoyonye | 9 |
| (+) | MS | Fruit: anisic alcohol content | Fruit : teneur en alcool anisique | Frucht: Gehalt an anisischem Alkohol | Fruto: contenido de alcohol anísico |  |  |
| QN | (c) | very low | très faible | sehr gering | muy bajo | Ordinaire | 1 |
|  |  | low | faible | klein | bajo |  | 3 |
|  |  | medium | moyenne | mittel | medio | Parahurahu | 5 |
|  |  | high | forte | hoch | alto | Tahiti | 7 |

# 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) Stem and leaf: observations on stem and fully developed leaves should be made, when the first fruit is fully developed. The observations on stem should be taken at mid-length of the stem. Observations on the leaf blade should be from the middle third of the stem.

(b) Inflorescence and flower: observations should be made on fully expanded inflorescence and from the first freshly opened flower.

(c) Fruit: observations should be made on fruit at physiological maturity

8.2 Explanations for individual characteristics

Ad. 3: Stem: shape in cross section

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 1 | 2 | 3 |
| round | round to angular | angular |

Ad. 7: Stem: spots

|  |  |
| --- | --- |
|  |  |
| 1 | 9 |
| absent | present |

Ad. 8: Leaf blade: conspicuousness of main vein

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 1 | 2 | 3 |
| weak | medium | strong |

Ad. 9: Leaf blade: shape of apex

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 1 | 2 | 3 |
| acute | obtuse | acuminate |

Ad. 11: Leaf blade: base

|  |  |
| --- | --- |
|  |  |
| 1 | 2 |
| clasping | tapering |

Ad. 12: Leaf blade: variegation

|  |  |
| --- | --- |
|  |  |
| 1 | 9 |
| absent | present |

Ad. 16: Leaf blade: length/width ratio

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | 🡨 broadest part 🡪 | |
|  |  | (below middle) | at middle |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| broad (low) 🡨 width (ratio length/width) 🡪 narrow (high) |  |  | 7  high |
|  |  | 5  medium |
|  | 3  low |  |

Ad. 19: Leaf blade: transversal section

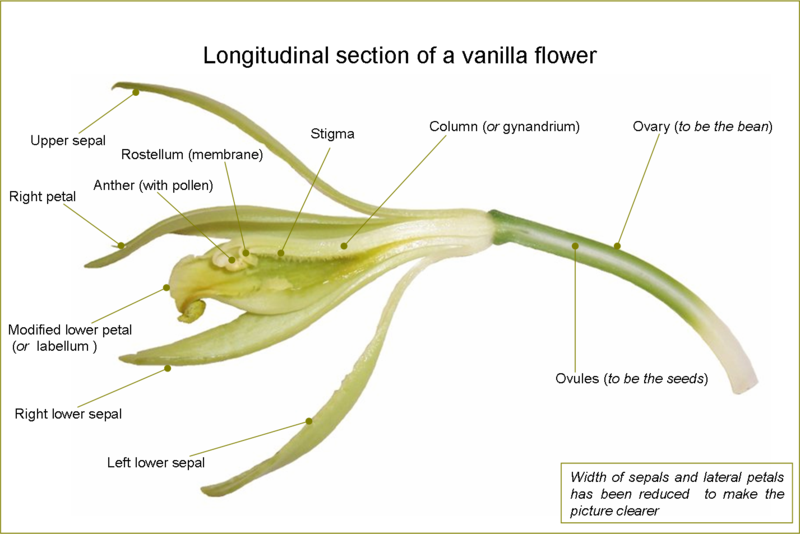
|  |  |  |
| --- | --- | --- |
|  |  |  |
| 1 | 2 | 3 |
| flat or slightly concave | moderately concave | strongly concave |

Ad. 20: Leaf blade: shape

|  |  |  |  |
| --- | --- | --- | --- |
| < broadest part > | | | |
| (below middle) | | at middle | (above middle) |
| < lateral outline > | flat parallel sides |  | | 4  oblong |  |
| rounded | 1  narrow ovate | 2  medium ovate | 3  elliptic | 5  obovate |

Ad. 22: Flower: length of gynandrium

Observations should be made on the first flower.



Ad. 25: Fruit: shape

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 1 | 2 | 3 |
| ovate | oblong | obovate |

Ad. 26: Fruit: transversal section shape

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | 🡨 broadest part 🡪 | |
|  |  | (below middle) | at middle |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| broad (low)🡨 width (ratio length/width) 🡪 narrow (high) |  |  | 4  trullate |  |
|  | 3  medium ovate |  | 6  elliptic |
|  | 2  broad ovate |  | 5  circular |
|  | 1  triangular |  |  |

Ad. 29: Fruit: vanillin content

Ad. 30: Fruit: anisic alcohol content

Protocol for the analysis of aroma compounds in vanilla mature pods

1. Sample collection

At least five mature pods (about 8 month post pollination, green/yellow color) collected on 5 distinct vines are collected from the vines and analyzed separately. The pods are weighted before storage at -80°C. They are then freeze-dried and weighted again in order to evaluate the water content.

2. Extraction

Five hundred milligrams of dry powder is suspended in 10 mL of water. After addition of 0.5 mL of sulfuric acid (18M), the suspension is thoroughly mixed and placed in a steam bath at 60°C for 2h. The mixture is cooled to room temperature and 1mL KOH (9.4M) is added to neutralize the mixture. Ethanol (20 mL) is added, and the mixture is thoroughly mixed and macerated for 4 hours. Subsequently, the mixture is poured through a sintered filter and the filtrate collected in a 50 mL flask. The filter cake is washed with ethanol until the total volume of filtrate and washings came up to 50 mL. The ethanolic solution is then extracted exhaustively with diethyl ether/pentane (1:1; total volume = 100 mL) and dried over anhydrous sodium sulfate prior to GC analysis.

3. GC analysis

Each extract is subjected to triple measurement using Gas Chromatography.

Quantification of the compounds (vanillin, 4-hydroxybenzyl alcohol, vanillic acid, 4-hydroxybenzaldehyde, anisic alcohol, anisic acid and 4-hydroxybenzoic acid) can be for instance as in Kaunzinger et al. (1997).

# Literature

Bouriquet, G. 1954 : Le Vanillier et la vanille dans le monde. Encyclopédie biologique - XLVI. Editions Paul Lechevalier. Paris. 746 p.

Castillo, M. R. y M. Engleman. 1993: Caracterización de dos tipos de *Vainilla planifolia*. Acta Bot. Mex. 25: 49-59.

Curti D., E. 1995: Cultivo y beneficiado de la vainilla en México. Folleto Técnico para productores. Organización Nacional de Vainilleros Indigenas. Papantla, Veracruz, México. 96 p.

Kaunzinger, A., Juchelka, D., Mosandl, A., 1997: Progress in the Authenticity Assessment of Vanilla. 1. Initiation of Authenticity Profiles. J. Agric. Food Chem. 45, 1752-1757

Lubinsky, P., M. Van Dam and A. Van Dam. 2006: Pollination of vanilla and evolution in Orchidaceae. Lindleyana 75:926-929

Lubinsky, P., Cameron, K.M., Molina, M. C., Wong, S. Lepers-Andrzejewski, A.Gómez P. and S.C. Kim. 2008: Neotropical roots of a Polynesian spice: The Hibrid origin of Tahitian vanilla, *Vanilla tahitensis* (Orchidaceae) Am. J. Bot. 95 (8): 1040-1047

Lubinsky, P., Bory, S., Hernández, J., Kim, S.C. and A. Gómez P. 2008: Origins and dispersal of cultivated vanilla (*Vanilla planifolia* Jacks. (Orchidaceae). Econ. Bot. 62(2): 127-138.

Soto A., M. A. 1993: *Vainilla odorata*, una especie de amplia distribución. Orquidea 13(1-2): 205-300.

Soto. A., M.A. 2006: La Vainilla: Retos y perspectivas de su cultivo. Biodiversitas 66: 2-9.

# Technical Questionnaire

| TECHNICAL QUESTIONNAIRE | | | | Page {x} of {y} | | Reference Number: | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | |  | |  | | | | | |
|  | | | |  | | Application date: | | | | | |
|  | | | |  | | (not to be filled in by the applicant) | | | | | |
| TECHNICAL QUESTIONNAIRE  to be completed in connection with an application for plant breeders’ rights | | | | | | | | | | | |
|  | | |  | | | | | |  | | |
| 1. Subject of the Technical Questionnaire | | | | | | | | | | | |
|  | | |  | | | | | |  | | |
| 1.1 Botanical name | | | *Vanilla planifolia* Jacks*.* | | | | | |  | | |
|  | | |  | | | | | |  | | |
| 1.2 Common name | | | Vanilla | | | | | |  | | |
|  | | |  | | | | | | | |  |
|  | | |  | | | | | |  | | |
| 2. Applicant | | | | | | | | | | | |
|  | | |  | | | | | |  | | |
| Name | | |  | | | | | |  | | |
|  | | |  | | | | | |  | | |
| Address | | |  | | | | | |  | | |
|  | | |  | | | | | |  | | |
| Telephone No. | | |  | | | | | |  | | |
|  | | |  | | | | | |  | | |
| Fax No. | | |  | | | | | |  | | |
|  | | |  | | | | | |  | | |
| E-mail address | | |  | | | | | |  | | |
|  | | |  | | | | | |  | | |
| Breeder (if different from applicant) | | | | | | | | |  | | |
|  | | |  | | | | | |  | | |
|  | | |  | | | | | |  | | |
|  | | |  | | | | | |  | | |
| 3. Proposed denomination and breeder’s reference | | | | | | | | | | | |
|  | | |  | | | | | |  | | |
| Proposed denomination | | |  | | | | | |  | | |
| (if available) | | |  | | | | | |  | | |
| Breeder’s reference | | |  | | | | | |  | | |
|  | | |  | | | | | |  | | |
| [[2]](#footnote-2)#4. Information on the breeding scheme and propagation of the variety  4.1 Breeding scheme  Variety resulting from:  4.1.1 Crossing  (a) controlled cross [ ]  (please state parent varieties)  (…………………..……………..…) x (……………..…………………..…)  female parent male parent  (b) partially known cross [ ]  (please state known parent variety(ies))  (…………………..……………..…) x (……………..…………………..…)  female parent male parent  (c) unknown cross [ ]  4.1.2 Mutation [ ]  (please state parent variety)     |  | | --- | |  |   4.1.3 Discovery and development [ ]  (please state where and when discovered and how developed)   |  | | --- | |  |   4.1.4 Other [ ]  (please provide details)   |  | | --- | |  | | | | | | | | | | | | |
| 4.2 Method of propagating the variety  4.2.1 Seed-propagated varieties  (a) Self-pollination [ ]  (b) Cross-pollination  (i) population [ ]  (ii) synthetic variety [ ]  (c) Hybrid [ ]  (d) Other [ ]  (please provide details)   |  | | --- | |  |   4.2.2 Vegetative propagation  (a) cuttings [ ]  (b) *in vitro* propagation [ ]  (c) grafting [ ]  (d) other (state method) [ ]   |  | | --- | |  | | | | | | | | | | | | |
| 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 | |
| **5.1 (1)** | **Stem: intensity of green color** | | | | | |  | | |  | |
|  | light | | | | | | Acamaya | | | 1[ ] | |
|  | medium | | | | | | Oreja de Burro, Princesa, Totonaku | | | 2[ ] | |
|  | dark | | | | | | Amarela, Espada | | | 3[ ] | |
| **5.2 (12)** | **Leaf blade: variegation** | | | | | |  | | |  | |
|  | absent | | | | | | Oreja de Burro, Totonaku | | | 1[ ] | |
|  | present | | | | | | Acamaya | | | 9[ ] | |
| **5.3 (13)** | **Only varieties without variegation: Leaf blade: intensity of green color** | | | | | |  | | |  | |
|  | light | | | | | | Oreja de Burro | | | 1[ ] | |
|  | medium | | | | | | Totonaku | | | 2[ ] | |
|  | dark | | | | | | Amarela | | | 3[ ] | |
| **5.4 (20)** | **Leaf blade: shape** | | | | | |  | | |  | |
|  | narrow ovate | | | | | | Espada | | | 1[ ] | |
|  | medium ovate | | | | | |  | | | 2[ ] | |
|  | elliptic | | | | | | Princesa | | | 3[ ] | |
|  | oblong | | | | | | Acamaya, Totonaku | | | 4[ ] | |
|  | obovate | | | | | | Oreja de Burro | | | 5[ ] | |
| **5.5 (27)** | **Fruit: length** | | | | | |  | | |  | |
|  | very short | | | | | |  | | | 1[ ] | |
|  | very short to short | | | | | |  | | | 2[ ] | |
|  | short | | | | | | Acamaya | | | 3[ ] | |
|  | short to medium | | | | | |  | | | 4[ ] | |
|  | medium | | | | | | Totonaku | | | 5[ ] | |
|  | medium to long | | | | | |  | | | 6[ ] | |
|  | long | | | | | | Amarela | | | 7[ ] | |
|  | long to very long | | | | | |  | | | 8[ ] | |
|  | very long | | | | | |  | | | 9[ ] | |
| 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 **similar** variety(ies) | | | Describe the expression of the characteristic(s) for **your** candidate variety | | | |
| *Example* | | *Fruit: color* | | | *yellow* | | | *dark green* | | | |
|  | |  | | |  | | |  | | | |
|  | |  | | |  | | |  | | | |
|  | |  | | |  | | |  | | | |
| Comments: | | | | | | | | | | | |
| [[3]](#footnote-3)#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  A representative color image 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. | | | | | | | | | | | |
| 9. Information on plant material to be examined or submitted for examination.  9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.  9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:  (a) Microorganisms (e.g. virus, bacteria, phytoplasma) Yes [ ] No [ ]  (b) Chemical treatment (e.g. growth retardant, pesticide) Yes [ ] No [ ]  (c) Tissue culture Yes [ ] No [ ]  (d) Other factors Yes [ ] No [ ]  Please provide details for where you have indicated “yes”.  …………………………………………………………… | | | | | | | | | | | |
| 10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:  Applicant’s name  Signature Date | | | | | | | | | | | |

[End of document]

1. \* 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), for the latest information.] [↑](#footnote-ref-1)
2. # Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire. [↑](#footnote-ref-2)
3. # Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire. [↑](#footnote-ref-3)