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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

Avocado Rootstocks

UPOV Code: PERSE_AME

Persea americana Mill.

[*]

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by (an) expert(s) from Mexico

to be considered by the

Technical Working Party for Fruit Crops
at its forty-sixth session
to be held in Mpumalanga, South Africa
from 2015-08-24
to 2015-08-28

Alternative Names:[*]

Botanical name	*English*	*French*	*German*	*Spanish*
Persea americana Mill.	Avocado Rootstocks	Porte-greffes d'avocatier	Avocado-Unterlagen	Portainjertos de aguacate, Portainjertos de palto

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

ASSOCIATED DOCUMENTS

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

Other associated UPOV documents: Test Guidelines for Avocado (TG/97/4).

[*] 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.]

TABLE OF CONTENTS PAGE

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of Persea americana Mill..

These Test Guidelines apply to all varieties used as rootstocks of all species of Persea

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 vegetatively propagated trees on their own roots..

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

5 trees.

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.

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

3. Method of Examination

3.1 Number of Growing Cycles

3.1.1 The minimum duration of tests should normally be a single growing cycle.

3.2 Testing Place

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

3.3 Conditions for Conducting the Examination

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

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 5 trees.

3.5 Additional Tests

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

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

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 5 plants or parts taken from each of 5 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 in a sample of 5 plants, 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 further examined by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

(a) Plant: vigor (characteristic 1)
(b) Shoot: length of internode (characteristic 6)
(c) Shoot: pubescence of terminal bud (characteristic 15)
(d) Young leaf: color (characteristic 17)
(e) Leaf blade: length (characteristic 19)
(f) Leaf blade: pubescence of the lower surface on principal vein (characteristic 31)

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

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS

and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 States of Expression and Corresponding Notes

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

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

State	Note
small	3
medium	5
large	7

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

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

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

(*) Asterisked characteristic – see Chapter 6.1.2

QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS – see Chapter 4.1.5

(a)-(b) See Explanations on the Table of Characteristics in Chapter 8.

(+) See Explanations on the Table of Characteristics in Chapter 8.

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

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. (*) QN VG (+) **Plant: vigor**	**Plante : vigueur**	**Pflanze: Wuchsstärke**	**Planta: vigor**		
weak	faible	gering	débil		1
medium	moyenne	mittel	medio	Merensky 2	3
strong	forte	stark	fuerte	G 755c	5
2. (*) QN VG (+) **Plant: habit**	**Plante : port**	**Pflanze: Wuchsform**	**Planta: porte**		
upright	dressé	aufrecht	erguido	Bounty	1
spreading	étalé	breitwüchsig	abierto	Borchard, Merensky 2	3
drooping	retombant	hängend	colgante	Filtro 9	5
3. QN VG **Plant: branching**	**Plante : ramification**	**Pflanze: Verzweigung**	**Planta: ramificación**		
weak	faible	gering	débil	ComCarr 1	3
medium	moyenne	mittel	medio	Velvick	5
strong	forte	stark	fuerte	Duke 7	7
4. QN VG (+) (a) **Young shoot: anthocyanin coloration of stem apex**					
absent or very weak				Filtro 7, Filtro 9	1
weak					2
medium					3
strong					4
very strong					5

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5. QN VG (b) **Shoot: thickness**					
thin					1
medium				Velvick	3
thick				G 755c	5
6. (*) QN MS VG (b) **Shoot: length of internode**					
short					1
medium				Merensky 2	3
long					5
7. QN VG (+) (b) **Shoot: pubescence on internodes**					
absent or weak				Duke 7	1
medium					2
strong					3
8. QN VG (b) **Shoot: number of lenticels**					
few					1
medium				ComCarr 1, Duke 7, Filtro 9	2
many					3
9. PQ VG (b) **Shoot: color of lenticels**					
yellow					1
green				G-22	2
red				Bounty, Duke 6	3
purple				Merensky 2	4

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10. (*) QN VG (+) (b) **Shoot: position of vegetative lateral bud in relation to shoot**					
adpressed					1
slightly held out				Thomas	2
markedly held out				Duke 7	3
11. QN VG (b) **Shoot: size of vegetative lateral bud**					
small	petit	klein	pequeña	M14	1
medium	moyen	mittel	mediana	Velvick	3
large	grand	groß	grande		5
12. PQ VG (+) (b) **Shoot: shape of vegetative lateral bud**					
acute				ComCarr 1, Velvick	1
obtuse				M14, Thomas	2
rounded					3
13. QN VG (+) (b) **Shoot: size of terminal bud**					
small					1
medium					2
large					3
14. PQ VG (+) (b) **Shoot: shape of terminal bud**					
acute				Velvick	1
obtuse				Duke 7	2
rounded					3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15. (*) QN VG (+) (b) **Shoot: pubescence of terminal bud**					
absent or very weak				M14	1
weak				Duke 7	2
medium				Velvick	3
strong				Thomas	4
very strong				G 755c	5
16. PQ VG (a) **Young leaf: color of pubescence of petiole**	**Jeune feuille: couleur de la pilosité du pétiole**	**Junges Blatt: Farbe der Behaarung des Blattstiels**	**Hoja joven: color de la pubescencia del peciolo**		
white				Bounty	1
yellow				Duke 6, Merensky 2	2
brown				Thomas	3
red brown					4
17. (*) PQ VG (a) **Young leaf: color**					
yellow green					1
green				G-22	2
reddish				Duke 6	3
18. QN VG (b) **Leaf: attitude relative to shoot**	**Feuille: orientation par rapport à la tige**	**Blatt: Haltung im Verhältnis zum Trieb**	**Hoja: porte en relación con el brote**		
upwards	vers le haut	aufwärts gerichtet	hacia arriba	Duke 7, G-6	1
outwards	perpendiculaire	abstehend	perpendicular	Bounty, Merensky 2	2
downwards	vers le bas	abwärts gerichtet	hacia abajo		3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
19. (*) QN MS VG (b)					
Leaf blade: length	**Limbe : longueur**	**Blattspreite: Länge**	**Limbo: longitud**		
short	court	kurz	corto	Duke 7	3
medium	moyen	mittel	mediano	Merensky 2	5
long	long	lang	largo	Filtro 7	7
20. QN MS VG (b)					
Leaf blade: width	**Limbe: largeur**	**Blattspreite: Breite**	**Limbo: anchura**		
very narrow	très étroit	sehr schmal	muy estrecho	Duke 7	1
narrow	étroit	schmal	estrecho	Thomas	3
medium	moyen	mittel	medio	Merensky 2	5
broad	large	breit	ancho	Bounty	7
very broad	très large	sehr breit	muy ancho	Filtro 9, G 755c	9
21. QN MG VG (+) (b)					
Leaf blade: ratio length/width	**Limbe: rapport longueur/largeur**	**Blattspreite: Ver-hältnis Länge/Breite**	**Limbo: relación entre la longitud y la anchura**		
small	faible	klein	pequeña	G 755c	3
medium	moyen	mittel	media	Merensky 2	5
large	élevé	groß	grande	Filtro 7	7
22. (*) PQ VG (+) (b)					
Leaf blade: shape	**Limbe: forme**	**Blattspreite: Form**	**Limbo: forma**		
lanceolate	lancéolé	lanzettlich	lanceolada	Filtro 7	1
ovate	ovale	eiförmig	oval	G 755c, Velvick	2
narrow elliptic				Thomas	3
medium elliptic				Merensky 2	4
circular					5
obovate					6

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
23. PQ VG (+) (b) **Leaf blade: shape of apex (excluding tip)**					
acute				Duke 7, Thomas	1
obtuse				Day, G 755c, Velvick	2
rounded					3
24. (*) QN VG (+) (b) **Leaf blade: length of tip**	**Limbe: longueur de la pointe**	**Blattspreite: Länge der aufgesetzten Spitze**	**Limbo: longitud de la punta**		
very short					1
short					2
medium					3
long				Velvick	4
25. PQ VG (+) (b) **Leaf blade: shape of base**	**Limbe : forme de la base**	**Blattspreite: Form der Basis**	**Limbo: forma de la base**		
acute	pointue	spitz	aguda	Duke 7, Thomas, Velvick	1
obtuse	obtuse	stumpf	obtusa	Filtro 7	2
rounded	arrondie	abgerundet	redondeada	G 755c	3
truncate					4
26. (*) QL VG (+) (b) **Leaf blade: twisting along whole length**	**Limbe: torsion sur toute la longueur**	**Blattspreite: Verdrehung auf der ganzen Länge**	**Limbo: torsión en toda la longitud**		
absent	absente	fehlend	ausente	Duke 7, Thomas	1
present	présente	vorhanden	presente		9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27. QL VG (+) (b) **Leaf blade: twisting of tip**					
absent				Duke 7, Thomas	1
present				Bounty	9
28. QN VG (+) (b) **Leaf blade: undulation of margin**	**Limbe: ondulation du bord**	**Blattspreite: Wellung des Randes**	**Limbo: ondulación del borde**		
absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Duke 7	1
weak	faible	gering	débil	Thomas	3
medium	moyenne	mittel	media	Velvick	5
strong	forte	stark	fuerte	Filtro 7	7
very strong	très forte	sehr stark	muy fuerte		9
29. QN VG (b) **Leaf blade: venation on upper side**					
sunken				ComCarr 1, G 755c	1
level				Duke 7	2
raised				Merensky 2	3
30. (*) QN VG (b) **Leaf blade: number of secondary veins**	**Limbe: nombre de nervures secondaires**	**Blattspreite: Anzahl sekundärer Adern**	**Limbo: número de nervios secundarios**		
few	petit	gering	bajo	Velvick	1
medium				Duke 7, Thomas	2
many				ComCarr 1, G 755c	3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
31. (*) QN VG (b) **Leaf blade: pubescence of the lower surface on principal vein**					
absent or sparse				Day	1
medium				G 755c, Velvick	2
dense				Thomas	3
32. (*) QN VG (+) (b) **Leaf blade: anise aroma**	**Limbe: arôme anisé**	**Blattspreite: Anisaroma**	**Limbo: aroma de anís**		
absent or weak	absent ou faible	fehlend oder gering	ausente o débil	Day	1
medium	moyen	mittel	medio	Duke 7, Merensky 2	2
strong	fort	stark	fuerte	Thomas	3
33. (*) QN MS VG (b) **Petiole: length**	**Pétiole : longueur**	**Blattstiel: Länge**	**Peciolo: longitud**		
short	court	kurz	corto	Duke 7, Merensky 2	3
medium	moyen	mittel	medio	Bounty, G 755c	5
long	long	lang	largo	Filtro 7	7
34. (*) QN VG (b) **Petiole: pubescence on upper side**	**Pétiole : pubescence sur la face supérieure**	**Blattstiel: Behaarung der Oberseite**	**Pecíolo: pubescencia en la parte superior**		
absent or very sparse	absente ou très éparse	fehlend oder sehr locker	ausente o muy escasa	Day	1
sparse	éparse	locker	escasa	Duke 7	2
dense	dense	dicht	densa	Thomas	3
35. QN VG (+) (b) **Petiole: depth of groove**	**Pétiole : profondeur du sillon**	**Blattstiel: Tiefe der Rinne**	**Pecíolo: profundidad de la acanaladura**		
shallow	peu profond	flach	poco profunda	Duke 7	1
medium	moyen	mittel	media	Day	2
deep	profond	tief	profunda	Velvick	3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
36. PQ MS VG (+) (b) **Petiole: cross section**					
broader than tall				G 755c	1
as broad as tall				Duke 7	2
taller than broad				ComCarr 1	3
37. QN MG VG (b) **Leaf blade: length relative to petiole length**	**Limbe : longueur par rapport à la longueur du pétiole**	**Blattspreite: Länge im Verhältnis zur Länge des Blattstiels**	**Limbo: longitud con relación a la longitud del pecíolo**		
short	court	kurz	corto		1
medium	moyen	mittel	medio	Duke 7	3
long	long	lang	largo	Filtro 9	5

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) Young shoot / Young leaf: Observations on the young shoot and young leaf should be made on the current season's growth, during a period of active growth (flush).

(b) Shoot / leaf / lateral bud / terminal bud: Observations on shoots, mature leaves and buds should be made on branches or stem which are not showing signs of new flush on the outside of the tree. They should be made in the middle third of the last current season's growth and close to next budbreak.

8.2 Explanations for individual characteristics

Ad. 1: Plant: vigor

The vigor of the plant should be considered as the overall abundance of vegetative growth.

Ad. 2: Plant: habit

1 - upright

3 - spreading

5 - drooping

Ad. 4: Young shoot: anthocyanin coloration of stem apex

Should be assessed upper third on the shoot and without considering the color of lenticels on the stem.

Ad. 7: Shoot: pubescence on internodes

Should be assessed at the upper third of the shoot.

Ad. 10: Shoot: position of vegetative lateral bud in relation to shoot

1 - adpressed

2 - slightly held out

3 - markedly held out

Ad. 12: Shoot: shape of vegetative lateral bud

1 - acute

2 - obtuse

3 - rounded

Ad. 13: Shoot: size of terminal bud

Should be assessed at the upper third of the shoot.

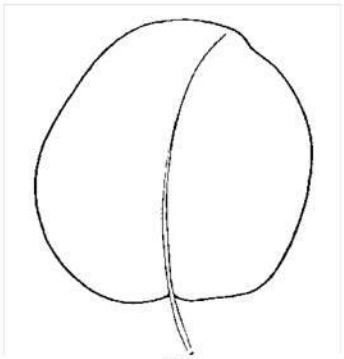
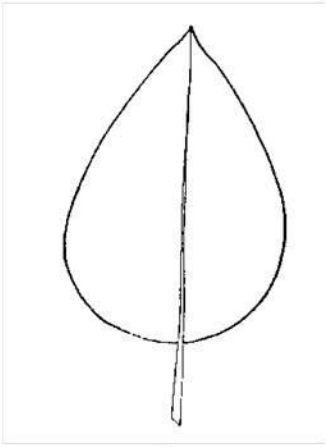
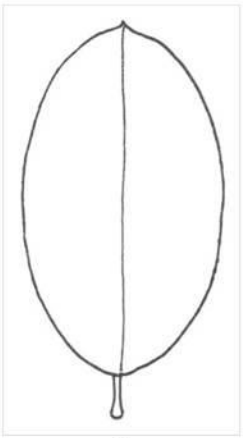
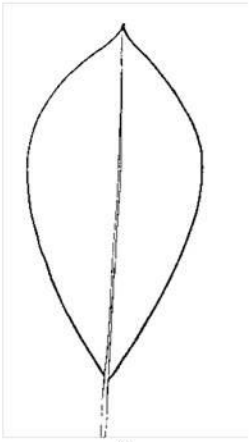
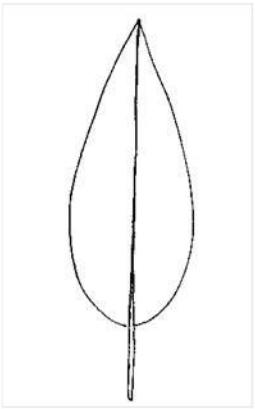
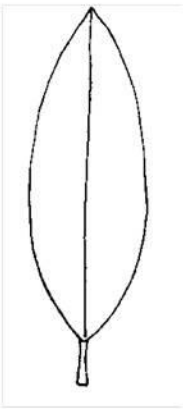
Ad. 14: Shoot: shape of terminal bud

Should be assessed at the upper third of the shoot.

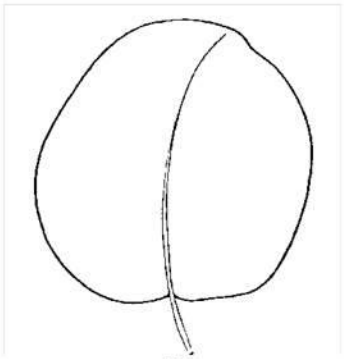
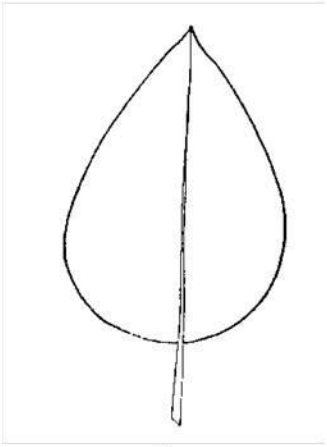
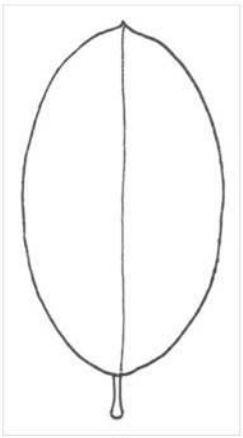
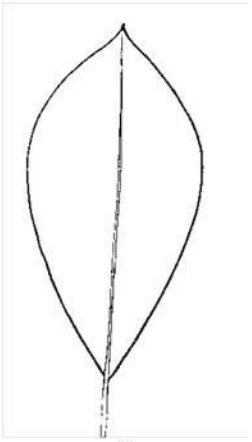
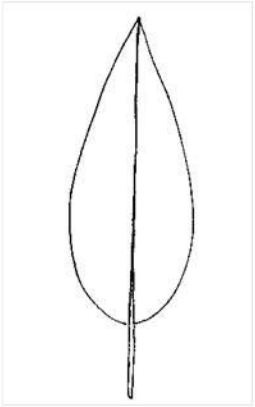
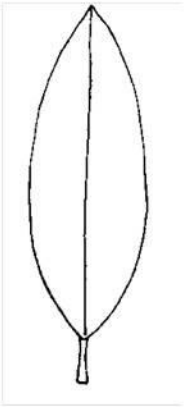
Ad. 15: Shoot: pubescence of terminal bud

Should be assessed at the upper third of the shoot.

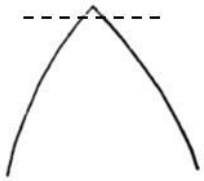
Ad. 21: Leaf blade: ratio length/width

width (ratio length/width) ← →	← broadest part →		
	(below middle)	at middle	(above middle)
broad (low)		 5 circular	
	 2 ovate	 4 medium elliptic	 6 obovate
narrow (high)	 1 lanceolate	 3 narrow elliptic	

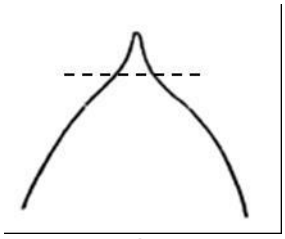
Ad. 22: Leaf blade: shape

width (ratio length/width)	← broadest part →		
	(below middle)	at middle	(above middle)
broad (low) →		 5 circular	
	 2 ovate	 4 medium elliptic	 6 obobate
← narrow (high)	 1 lanceolate	 3 narrow elliptic	

Ad. 23: Leaf blade: shape of apex (excluding tip)



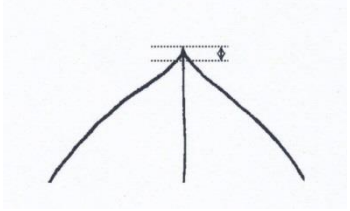
1 - acute



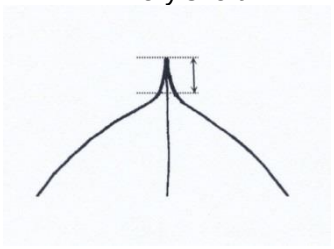
2 - obtuse

3 - rounded

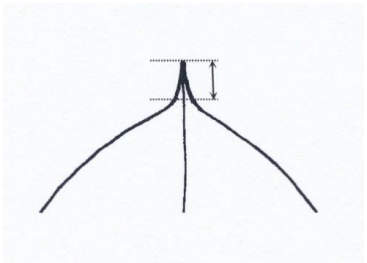
Ad. 24: Leaf blade: length of tip



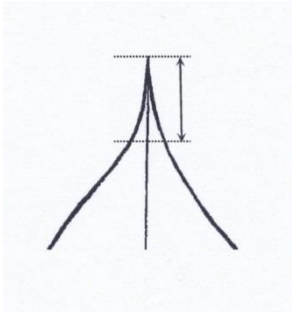
1 - very short



2 - short

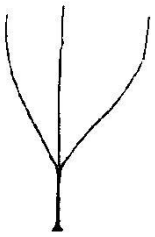


3 - medium

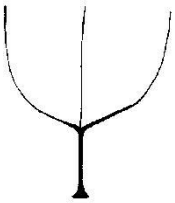


4 - long

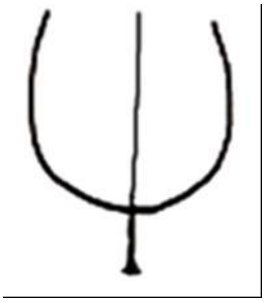
Ad. 25: Leaf blade: shape of base



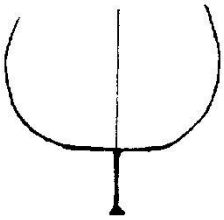
1 - acute



2 - obtuse

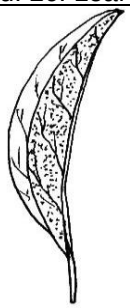


3 - rounded

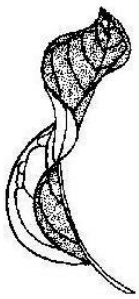


4 - truncate

Ad. 26: Leaf blade: twisting along whole length

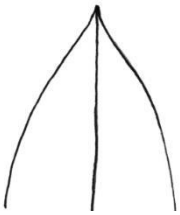


1 - absent

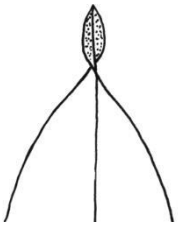


9 - present

Ad. 27: Leaf blade: twisting of tip



1 - absent



9 - present

Ad. 28: Leaf blade: undulation of margin

1 - absent or very weak

3 - weak

5 - medium

7 - strong

9 - very strong

Ad. 32: Leaf blade: anise aroma

Should be assessed by crushing the leaf and then smell.

Ad. 35: Petiole: depth of groove

1 - shallow

2 - medium

3 - deep

Ad. 36: Petiole: cross section

1 - broader than tall

2 - as broad as tall

3 - taller than broad

9. Literature

Barrientos-Priego, A. F., Muñoz-Pérez, R., Borys, M. W., Martínez-Damián, Ma. T. 2006: Taxonomía, cultivares y portainjertos. In: El Aguacate y su Manejo Integrado. 2ª edición. D. Téliz, A. Mora (eds.). Mundi-Prensa México, S.A. de C.V. D.F., México. pp. 30-62.

Crane, J. H., Douhan, G., Faber, B. A., Arpaia, M. L, Bender, G. S., Balerdi, C. F., Barrientos-Priego, A. F. 2013: Cultivars and rootstocks. In: The Avocado Botany, and Uses. B. A. Schaffer, A. W. Whiley, B. N. Wolstenholme. CAB International Publishing. Oxfordshire, UK. pp. 200-233.

UPOV, 2006: Test guideline for avocado. UPOV. Geneva, Switzerland, 39 p.

10. 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

1.1.1	Botanical Name	Persea Mill.	[ ]
1.1.2	Common Name	Avocado Rootstocks	
1.2.1	Botanical Name	P. americana Mill.	[ ]
1.2.2	Common Name	avocado	
1.3.1	Botanical Name	P. schiedeana Nees	[ ]
1.3.2	Common Name	Chinini, Coyo	

2. Applicant

Name

Address

Telephone No.

Fax No.

E-mail address

Breeder (if different from applicant)

3. Proposed denomination and breeder's reference

Proposed denomination
(if available)

Breeder's reference

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

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

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

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

(……..……..…) x (……..……..…)
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 Vegetative propagation

(a) cuttings [ ]
(b) etiolation layering [ ]
(c) Other (state method) [ ]

.....
: :
: :
:.....:

4.2.2 Other [ ]

(please provide details)

.....
: :
: :
:.....:

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)	**Plant: vigor**		
	weak		1[ ]
	medium	Merensky 2	3[ ]
	strong	G 755c	5[ ]
5.2 (6)	**Shoot: length of internode**		
	short		1[ ]
	medium	Merensky 2	3[ ]
	long		5[ ]
5.3 (15)	**Shoot: pubescence of terminal bud**		
	absent or very weak	M14	1[ ]
	weak	Duke 7	2[ ]
	medium	Velvick	3[ ]
	strong	Thomas	4[ ]
	very strong	G 755c	5[ ]
5.4 (17)	**Young leaf: color**		
	yellow green		1[ ]
	green	G-22	2[ ]
	reddish	Duke 6	3[ ]
5.5 (19)	**Leaf blade: length**		
	short	Duke 7	3[ ]
	medium	Merensky 2	5[ ]
	long	Filtro 7	7[ ]
5.6 (31)	**Leaf blade: pubescence of the lower surface on principal vein**		
	absent or sparse	Day	1[ ]
	medium	G 755c, Velvick	2[ ]
	dense	Thomas	3[ ]

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	*Shoot: thickness*	*thin*	*thick*

Comments:

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

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.

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 [ ] 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”.

.....

9.3 Has the plant material to be examined been tested for the presence of virus or other pathogens?
Yes [ ]
(please provide details as specified by the Authority)
No [ ]

Sunblotch viroid

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]