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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

AVOCADO ROOTSTOCKS *

UPOV Code: PERSE_AME; PERSE_SCH

Persea americana Mill.;
Persea schiedeana Nees

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names:*

Botanical name	English	French	German	Spanish
<i>Persea americana</i> Mill.	Avocado	Avocatier	Avocado	Aguacate, Palto
<i>Persea schiedeana</i> Nees	Coyo avocado		wilde Avocado	Chinini, Coyó

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).

* 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.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Persea americana* Mill. and *Persea schiedeana* Nees used as a rootstock.

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.

3. Method of Examination

3.1 *Number of Growing Cycles*

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*

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*

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, 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 internodes (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: density of pubescence of lower side of main vein (characteristic 32)

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

6. Introduction to the Table of Characteristics

6.1 *Categories of Characteristics*

6.1.1 *Standard Test Guidelines Characteristics*

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

6.1.2 *Asterisked Characteristics*

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

6.2 *States of Expression and Corresponding Notes*

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

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

example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

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

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

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

6.3 *Types of Expression*

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

6.4 *Example Varieties*

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

6.5 *Legend*

(*) Asterisked characteristic – see Chapter 6.1.2

QL Qualitative characteristic – see Chapter 6.3

QN Quantitative characteristic – see Chapter 6.3

PQ Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS – see Chapter 4.1.5

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

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

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. (*) (+)	VG Plant: vigor	Plante: vigueur	Pflanze: Wuchsstärke	Planta: vigor		
QN	weak	faible	gering	débil		1
	medium	moyenne	mittel	medio	Merensky 2	3
	strong	forte	stark	fuerte	G 755c	5
2. (*) (+)	VG Plant: growth habit	Plante: type de croissance	Pflanze: Wuchsform	Planta: habito de crecimiento		
QN	upright	dressé	aufrecht	erguido	Bounty	1
	spreading	étalé	breitwüchsig	extendido	Borchard, Merensky 2	3
	drooping	retombant	hängend	colgante	Filtro 9	5
3. (*) (+)	VG Plant: branching	Plante: ramification	Pflanze: Verzweigung	Planta: ramificación		
QN	weak	faible	gering	débil	ComCarr 1	3
	medium	moyenne	mittel	media	Velvick	5
	strong	forte	stark	fuerte	Duke 7	7
4. (*) (+)	VG Young shoot: anthocyanin coloration	Jeune rameau: pigmentation anthocyanique	Junger Trieb: Anthocyanfärbung	Brote joven: pigmentación antocianica		
QN (a)	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Borchard, Thomas	1
	weak	faible	gering	débil	Uzi	2
	medium	moyenne	mittel	media	Julian	3
	strong	forte	stark	fuerte	Merensky 2	4
	very strong	très forte	sehr stark	muy fuerte	Zentmyer	5
5. (*) (+)	VG Shoot: thickness	Rameau: épaisseur	Trieb: Dicke	Brote: grosor		
QN (b)	thin	fin	dünn	delgado		1
	medium	moyen	mittel	medio	Velvick	3
	thick	épais	dick	grueso	G 755c	5
6. (*) (+)	VG/MS Shoot: length of internodes	Rameau: longueur des entre-nœuds	Trieb: Länge der Internodien	Tallo: longitud de los entrenudos		
QN (b)	short	courte	kurz	corto		1
	medium	moyenne	mittel	medio	Merensky 2	3
	long	longue	lang	largo		5
7. (*) (+)	VG Shoot: pubescence of internodes	Rameau: pilosité des entre-nœuds	Trieb: Behaarung der Internodien	Brote: pubescencia de los entrenudos		
QN	absent or weak	nulle ou faible	fehlend oder gering	ausente o débil	Duke 7	1
	medium	moyenne	mittel	media	Uzi	2
	strong	forte	stark	fuerte	Thomas	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8.	VG	Shoot: number of lenticels	Rameau: nombre de lenticelles	Trieb: Anzahl Lentizellen	Brote: número de lenticelas		
QN	(b)	few	petit	wenige	bajo	Borchard	1
		medium	moyen	mittel	medio	Steddom	2
		many	grand	viele	alto	Thomas	3
9.	VG	Shoot: color of lenticels	Rameau: couleur des lenticelles	Trieb: Farbe der Lentizellen	Brote: color de las lenticelas		
PQ	(b)	green	vert	grün	verde	G-22	1
		yellow	jaune	gelb	amarillo		2
		red	rouge	rot	rojo	Bounty, Duke 6	3
		purple	pourpre	purpurn	púrpura	Merensky 2	4
10. (*) (+)	VG	Shoot: position of vegetative lateral bud in relation to shoot	Rameau: position du bourgeon latéral par rapport au rameau	Trieb: Stellung der vegetativen Seitenknospe im Verhältnis zum Trieb	Brote: posición de la yema vegetativa lateral en relación con el brote		
QN	(b)	adpressed	apprimé	anliegend	adpresa		1
		slightly held out	légèrement divergent	leicht abstehend	ligeramente divergente	Thomas	2
		markedly held out	fortement divergent	deutlich abstehend	fuertemente divergente	Duke 7	3
11.	VG	Shoot: size of vegetative lateral bud	Rameau: taille du bourgeon latéral	Trieb: Größe der vegetativen Seitenknospe	Brote: tamaño de la yema vegetativa lateral		
QN	(b)	small	petit	klein	pequeño	M14	1
		medium	moyen	mittel	mediano	Velvick	3
		large	grand	groß	grande		5
12. (+)	VG	Shoot: shape of vegetative lateral bud	Rameau: forme du bourgeon latéral	Trieb: Form der vegetativen Seitenknospe	Brote: forma de la yema vegetativa lateral		
PQ	(b)	acute	aigu	spitz	aguda	ComCarr 1, Velvick	1
		obtuse	obtus	stumpf	obtusa	M14, Thomas	2
		rounded	arrondi	abgerundet	redondeada		3
13.	VG	Shoot: size of terminal bud	Rameau: taille du bourgeon terminal	Trieb: Größe der Endknospe	Brote: tamaño de la yema terminal		
QN	(c)	small	petit	klein	pequeño		1
		medium	moyen	mittel	mediano		2
		large	grand	groß	grande		3
14.	VG	Shoot: shape of terminal bud	Rameau: forme du bourgeon terminal	Trieb: Form der Endknospe	Brote: forma de la yema terminal		
PQ	(c)	acute	aigu	spitz	aguda	Velvick	1
		obtuse	obtus	stumpf	obtusa	Duke 7	2
		rounded	arrondi	abgerundet	redondeada		3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15. (*)	VG	Shoot: pubescence of terminal bud	Rameau: pilosité du bourgeon terminal	Trieb: Behaarung der Endknospe	Brote: pubescencia de la yema terminal		
QN	(c)	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	M14	1
		weak	faible	gering	débil	Duke 7	2
		medium	moyenne	mittel	media	Velvick	3
		strong	forte	stark	fuerte	Thomas	4
		very strong	très forte	sehr stark	muy fuerte	G 755c	5
16.	VG	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		
PQ	(a)	white	blanc	weiß	blanco	Bounty	1
		yellow	jaune	gelb	amarillo	Duke 6, Merensky 2	2
		brown	marron	braun	marrón	Thomas	3
		red brown	brun-rouge	rotbraun	marrón rojizo		4
17. (*)	VG	Young leaf: color	Jeune feuille: couleur	Junges Blatt: Farbe	Hoja joven: color		
PQ	(a)	yellow green	vert-jaune	gelbgrün	verde amarillento		1
		green	vert	grün	verde	G-22	2
		red	rouge	rot	rojo	Duke 6	3
18.	VG	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		
QN	(b)	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
19. (*)	VG/MS	Leaf blade: length	Limbe: longueur	Blattspreite: Länge	Limbo: longitud		
QN	(b)	short	court	kurz	corto	Duke 7	3
		medium	moyen	mittel	medio	Merensky 2	5
		long	long	lang	largo	Filtro 7	7
20.	VG/MS	Leaf blade: width	Limbe: largeur	Blattspreite: Breite	Limbo: anchura		
QN	(b)	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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21. (*) (+)	VG	Leaf blade: shape	Limbe: forme	Blattspreite: Form	Limbo: forma		
PQ	(b)	ovate	ovale	eiförmig	oval	G 755c, Velvick	1
		lanceolate	lancéolé	lanzettlich	lanceolada	Filtro 7	2
		circular	circulaire	kreisförmig	circular		3
		medium elliptic	elliptique moyen	mittel elliptisch	elíptica media	Merensky 2	4
		narrow elliptic	elliptique étroit	schmal elliptisch	elíptica estrecha	Thomas	5
		obovate	obovale	verkehrt eiförmig	oboval		6
22. (*)	MS/ VG	Petiole: length	Pétiole: longueur	Blattstiel: Länge	Pecíolo: longitud		
QN	(b)	short	court	kurz	corto	Duke 7, Merensky 2	3
		medium	moyen	mittel	medio	Bounty, G 755c	5
		long	long	lang	largo	Filtro 7	7
23.	VG/ MS	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		
QN	(b)	short	court	kurz	corto		1
		medium	moyen	mittel	medio	Duke 7	3
		long	long	lang	largo	Filtro 9	5
24. (+)	VG	Leaf blade: shape of apex (excluding tip)	Limbe: forme du sommet (pointe exclue)	Blattspreite: Form des Apex (ohne aufgesetzte Spitze)	Limbo: forma del ápice (excluida la punta)		
PQ	(b)	acute	aigu	spitz	aguda	Duke 7, Thomas	1
		obtuse	obtus	stumpf	obtusa	Day, G 755c, Velvick	2
		rounded	arrondi	abgerundet	redondeada		3
25. (*) (+)	VG	Leaf blade: length of tip	Limbe: longueur de la pointe	Blattspreite: Länge der aufgesetzten Spitze	Limbo: longitud de la punta		
QN	(b)	very short	très courte	sehr kurz	muy corta	Uzi	1
		short	courte	kurz	corta	Filtro 9	2
		medium	moyenne	mittel	media	Zentmyer	3
		long	longue	lang	larga	Velvick	4
26. (+)	VG	Leaf blade: shape of base	Limbe: forme de la base	Blattspreite: Form der Basis	Limbo: forma de la base		
PQ	(b)	acute	pointue	spitz	aguda	Duke 7, Thomas, Velvick	1
		obtuse	obtuse	stumpf	obtusa	Filtro 7	2
		rounded	arrondie	abgerundet	redondeada	G 755c	3
		truncate	tronquée	gerade	truncada		4
27. (*) (+)	VG	Leaf blade: twisting along whole length	Limbe: torsion sur toute la longueur	Blattspreite: Verdrehung auf der ganzen Länge	Limbo: torsión en toda la longitud		
QL	(b)	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
28.	VG	Leaf blade: twisting of tip	Limbe: torsion du sommet	Blattspreite: Verdrehung der Spitze	Limbo: torsión de la punta		
(+)							
QL	(b)	absent	absente	fehlend	ausente	Duke 7, Thomas	1
		present	présente	vorhanden	presente	Bounty	9
29.	VG	Leaf blade: undulation of margin	Limbe: ondulation du bord	Blattspreite: Wellung des Randes	Limbo: ondulación del borde		
(+)							
QN	(b)	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
30.	VG	Leaf blade: venation on upper side	Limbe: nervation sur la face supérieure	Blattspreite: Aderung auf Oberseite	Limbo: nervadura del haz		
QN	(b)	sunken	légèrement en creux	eingesunken	hundida	ComCarr 1, G 755c	1
		level	plate	eben	plana	Duke 7	2
		raised	en relief	erhaben	protuberante	Merensky 2	3
31.	VG	Leaf blade: number of secondary veins	Limbe: nombre de nervures secondaires	Blattspreite: Anzahl sekundärer Adern	Limbo: número de nervios secundarios		
(*)							
QN	(b)	few	petit	wenige	bajo	Velvick	1
		medium	moyen	mittel	medio	Duke 7, Thomas	2
		many	grand	viele	alto	ComCarr 1, G 755c	3
32.	VG	Leaf blade: density of pubescence of lower side of main vein	Limbe: densité de la pilosité de la face inférieure de la nervure principale	Blattspreite: Dichte der Behaarung der Unterseite der Hauptader	Limbo: densidad de la pubescencia del envés del nervio principal		
(*)							
QN	(b)	absent or sparse	nulle ou peu dense	fehlend oder locker	ausente o laxa	Day	1
		medium	moyenne	mittel	media	G 755c, Velvick	2
		dense	dense	dicht	densa	Thomas	3
33.	VG	Leaf blade: anise aroma	Limbe: arôme anisé	Blattspreite: Anisaroma	Limbo: aroma de anís		
(*)							
(+)							
QN	(b)	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
34.	VG	Petiole: density of pubescence on upper side	Pétiole: pilosité sur la face supérieure	Blattstiel: Behaarung der Oberseite	Pecíolo: pubescencia en la parte superior		
(*)							
QN	(b)	absent or sparse	nulle ou peu dense	fehlend oder locker	ausente o laxa	Day	1
		medium	moyenne	mittel	media	Duke 7	2
		dense	dense	dicht	densa	Thomas	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
35.	VG	Petiole: depth of groove	Pétiole: profondeur du sillon	Blattstiel: Tiefe der Rinne	Pecíolo: profundidad de la acanaladura		
(+)							
QN	(b)	absent or shallow	absent ou peu profond	flach	ausente o poco profunda	Duke 7	1
		medium	moyen	mittel	media	Day	2
		deep	profond	tief	profunda	Velvick	3
36.	VG	Petiole: cross section	Pétiole: section transversale	Blattstiel: Querschnitt	Pecíolo: sección transversal		
(+)							
QN	(b)	broader than tall	plus large que haute	breiter als hoch	más ancha que alta	G 755c	1
		as broad as tall	aussi large que haute	so breit wie hoch	tan ancha como alta	Duke 7	2
		taller than broad	plus haute que large	höher als breit	más alta que ancha	ComCarr 1	3

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 should be made on the current season's growth, during a period of active growth (flush).
- (b) Observations 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 season's growth and close to next bud break.
- (c) Observations 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 upper third of the last season's growth and close to next bud break.

8.2 *Explanations for individual characteristics*

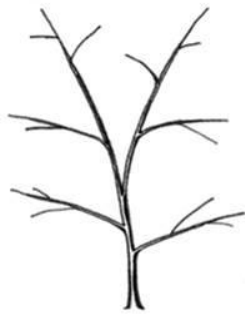
Ad. 1: Plant: vigor

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

Ad. 2: Plant: growth habit



1
upright



3
spreading



5
drooping

Ad. 4: Young shoot: anthocyanin coloration

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

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

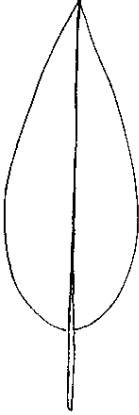
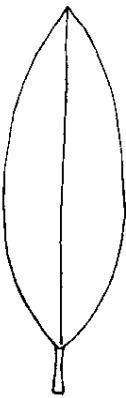
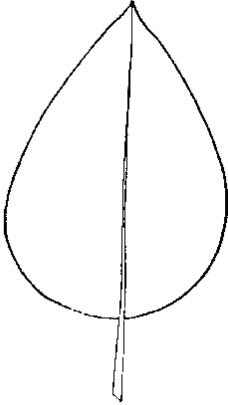
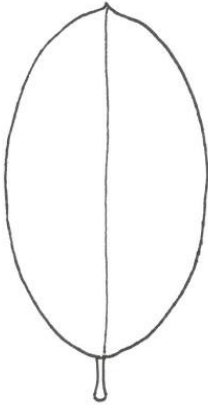
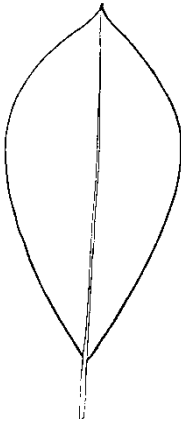
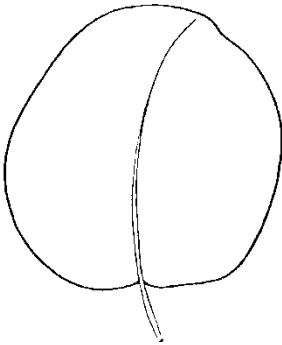


2
obtuse

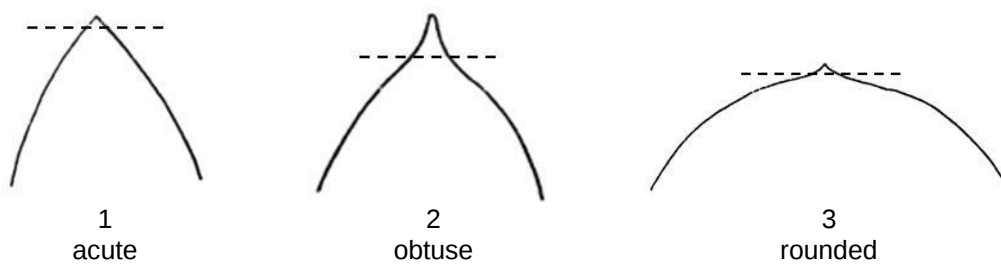


3
rounded

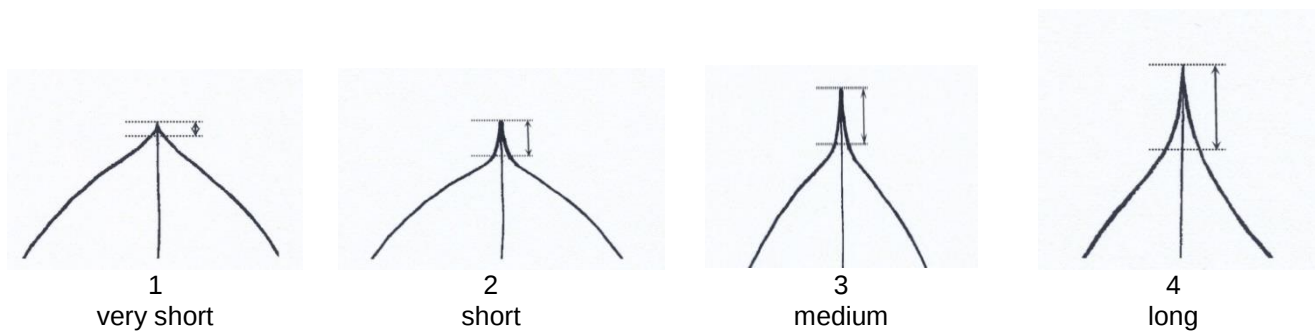
Ad. 21: Leaf blade: shape

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

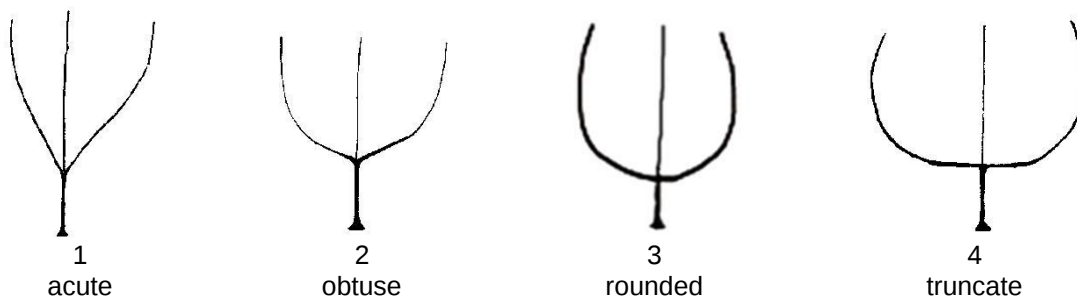
Ad. 24: Leaf blade: shape of apex (excluding tip)



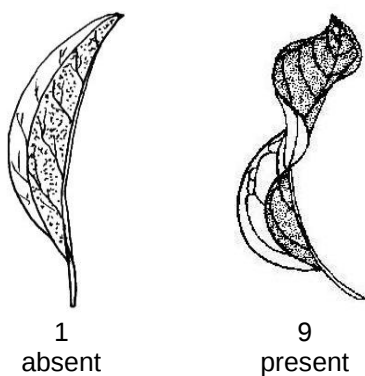
Ad. 25: Leaf blade: length of tip



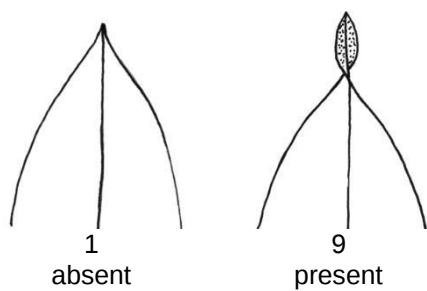
Ad. 26: Leaf blade: shape of base



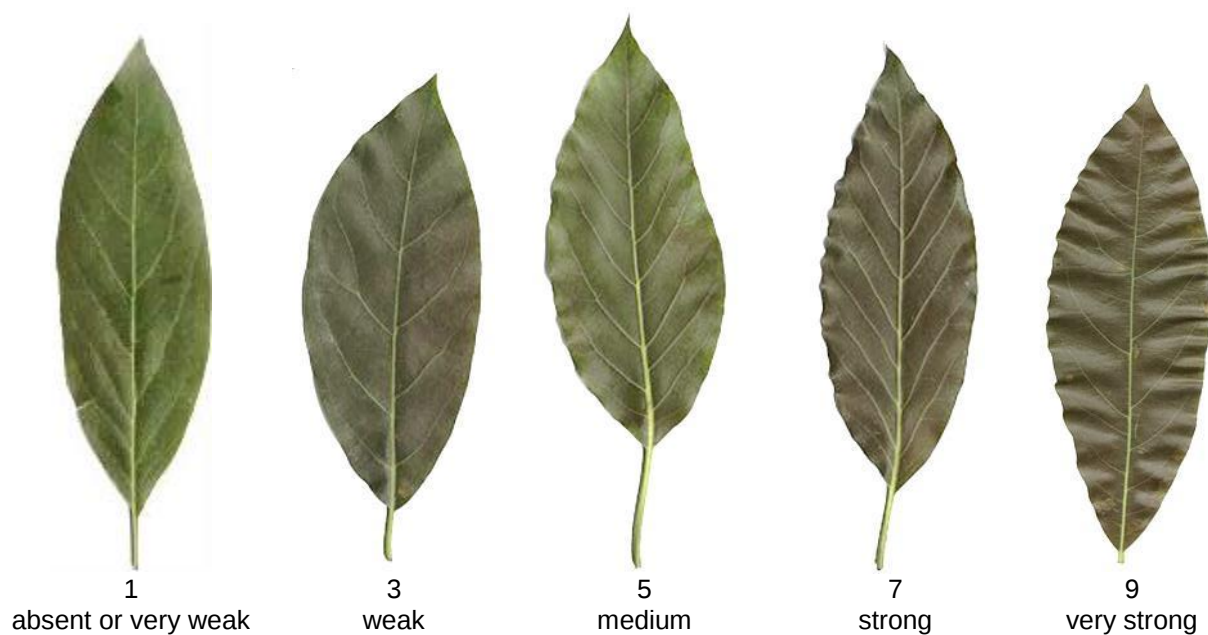
Ad. 27: Leaf blade: twisting along whole length



Ad. 28: Leaf blade: twisting of tip



Ad. 29: Leaf blade: undulation of margin



Ad. 33: Leaf blade: anise aroma

Should be assessed by crushing the leaf and smelling.

Ad. 35: Petiole: depth of groove



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., MX. 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. Whitley, B. N. Wolstenholme. CAB International Publishing. Oxfordshire, UK. pp. 200-233.

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	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	P. americana Mill. []
1.1.2 Common name	Avocado
1.2.1 Botanical name	P. schiedeana Nees []
1.2.2 Common name	Coyo avocado

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:
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#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)

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:
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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)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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 Plant: vigor (1)		
weak		1[]
weak to medium		2[]
medium	Merensky 2	3[]
medium to strong		4[]
strong	G 755c	5[]
5.2 Shoot: length of internodes (6)		
short		1[]
short to medium		2[]
medium	Merensky 2	3[]
medium to long		4[]
long		5[]
5.3 Shoot: pubescence of terminal bud (15)		
absent or very weak	M14	1[]
weak	Duke 7	2[]
medium	Velvick	3[]
strong	Thomas	4[]
very strong	G 755c	5[]
5.4 Young leaf: color (17)		
yellow green		1[]
green	G-22	2[]
red	Duke 6	3[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
5.5 Leaf blade: length (19)		
very short		1[]
very short to short		2[]
short	Duke 7	3[]
short to medium		4[]
medium	Merensky 2	5[]
medium to long		6[]
long	Filtro 7	7[]
long to very long		8[]
very long		9[]
5.6 Leaf blade: density of pubescence of lower side of main vein (32)		
absent or sparse	Day	1[]
medium	G 755c, Velvick	2[]
dense	Thomas	3[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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
<i>Example</i>	<i>Shoot: thickness</i>	<i>thin</i>	<i>thick</i>
Comments:			

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

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:
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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 []

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]