E

TG/97/4(proj.4)
ORIGINAL: English
DATE: 2005-07-23

UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

AVOCADO

UPOV Code: PERSE_AME

Persea americana Mill.

*

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Mexico

to be considered by the Technical Working Party for Fruit Crops at its thirty-sixth session, to be held in Kôfu, Japan from September 5 to 9, 2005

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Persea americana Mill.	Avocado	Avocatier	Avocado	Aguacate, 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.

* 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.

2. Material Required

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

2.2 The material is to be supplied in the form of graft sticks.

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

8 graft sticks, sufficient to propagate 8 trees.

The rootstock to be used is specified by the competent authority.

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

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

3. Method of Examination

3.1 Number of Growing Cycles

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

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

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

3.3.2 The recommended type of plot in which to observe the characteristic is indicated by the following key in the second column of the Table of Characteristics:

A: growing trial
B: special test.

3.3.4 Because daylight varies, color determinations made against a color chart should be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room without direct sunlight. The spectral distribution of the illuminant for artificial daylight should conform with the CIE Standard of Preferred Daylight D 6500 and should fall within the tolerances set out in the British Standard 950, Part I. These determinations should be made with the plant part placed against a white background.

3.4 Test Design

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

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

3.5 Number of Plants / Parts of Plants to be Examined

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

3.6 Additional Tests

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

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

4.1.2 Consistent Differences

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

4.1.3 Clear Differences

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

4.2 Uniformity

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

4.2.2 For the assessment of uniformity, a population standard of 1% and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 5 plants, no off-types are allowed.

4.3 Stability

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

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

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

(a) Leaf blade: anise aroma (characteristic 19);

(b) Ripe fruit: color (characteristic 51);

(c) Ripe fruit: thickness of skin (characteristic 52);

(d) Time of fruit maturity for harvesting (characteristic 69).

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

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 States of Expression and Corresponding Notes

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

(*) Asterisked characteristic – see Chapter 6.1.2

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

A: growing trial – see Chapter 3.3.3
B: special test – see Chapter 3.3.3

(a)-(i) 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. **(*)**	**A**	**Tree: growth habit**					
PQ	**(a)**	upright				Bacon, Zutano	1
		spreading				Fuerte, Hass	2
		drooping				Colín V-33	3
		weeping				Wilg	4
2. **(*)**	**A**	**Young shoot: color**					
PQ	**(a)**	yellow green				Collinson	1
		green				Benedict, G-22, Teague	2
		reddish				Duke 6	3
3.	**A**	**Young shoot: color of lenticels**					
PQ	**(a)**	yellow					1
		green				Collinson, G-22	2
		red				Benedict, Duke 6	3
		purple					4
4. **(+)**	**A**	**Shoot: length of internode**					
QN		short				San Martín, Wilg	1
		medium				Fuerte, Hass	2
		long					3
5.	**A**	**Young leaf: color of pubescence of petiole**					
PQ	**(a)**	white				Edranol	1
	(b)	yellow				Duke 6	2
		brown					3
		red brown				Fuerte	4

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6.	**A**	**Leaf: attitude relative to shoot (during active growth)**					
QN	**(c)**	upwards				G-6	1
		outwards				Hass	2
		downwards					3
7.	**A**	**Leaf blade: twisting**					
(+)							
QL	**(c)**	absent				Fuerte	1
		present				Zutano	9
8.	**A**	**Leaf blade: length**					
QN	**(c)**	very short				San Martín	1
		short				Fuchsia, Puebla, Topa Topa	3
		medium				Choquette, Colín V-33, Fuerte	5
		long				Barker	7
		very long				Encinos	9
9.	**A**	**Leaf blade: width**					
QN	**(c)**	very narrow				Duke 7, San Martín	1
		narrow				Hass, Thomas	3
		medium				Choquette, Fuerte	5
		broad				Monroe, Pollock	7
		very broad				Encinos, G755c	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10.	**A**	**Leaf blade: ratio length/width**					
QN	**(c)**	very small				Santana	1
		small				G755c	3
		medium				Choquette	5
		large				Mike, Pinkerton	7
		very large				Reed	9
11.	**A**	**Leaf blade: shape**					
(+)							
PQ	**(c)**	lanceolate				Collinson	1
		ovate				Teague	2
		elliptic				Duke	3
		circular				Santana	4
		obovate				Dilly	5
12.	**A**	**Leaf blade: shape of apex**					
(+)							
PQ	**(c)**	caudate				Ettinger	1
		acuminate				Fuerte	2
		acute				Hass	3
		rounded				Santana	4
13.	**A**	**Leaf blade: twisting of apex**					
(+)							
QL	**(c)**	absent				Fuerte	1
		present				Collinson	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14.	**A**	**Leaf blade: undulation of margin**					
QN	**(c)**	absent or very weak				Duke	1
		weak				Frazer	3
		medium				Ettinger	5
		strong				Pinkerton	7
		very strong				Arturo	9
15.	**A**	**Leaf blade: conspicuousness of venation of upper surface**					
QN	**(c)**	inconspicuous or weak				Day	1
		medium				Duke 7	2
		strong				Colín V-33	3
16.	**A**	**Leaf blade: venation on upper surface**					
QN	**(c)**	sunken				G755c, Topa Topa	1
		level				Duke 7, Fuerte	2
		raised				Edranol, Frazer, Teague	3
17.	**A**	**Leaf blade: number of secondary veins**					
QN	**(c)**	few				Aguilar, Hass, Mike	1
		medium				Duke 7, Fuerte, Pinkerton	2
		many				Encinos, G755c	3
18.	**A**	**Leaf blade: density of pubescence on the lower surface**					
QN	**(b)**	absent or sparse				Hass	1
	(c)	medium				Edranol	2
		dense				Duke	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
19. (*)	**A**	**Leaf blade: anise aroma**					
QN	**(c)**	absent or very weak				Hass, Reed	1
		medium				Duke 7	2
		strong				Thomas	3
20.	**A**	**Petiole: length**					
QN	**(c)**	very short				San Martín	1
		short				Aguilar, Reed	3
		medium				Frazer, G755c, Mike	5
		long				Encinos, Hass	7
		very long				Fuerte	9
21. (+)	**A**	**Inflorescence: length of axis**					
QN	**(d)**	short				Bacon	3
		medium				Fuerte	5
		long				Pinkerton	7
22.	**A**	**Inflorescence: color of lenticels**					
QL	**(d)**	green				Topa Topa	1
		red				Teague	2
23. (+)	**A**	**Inflorescence: flowering type**					
QL	**(d)**	type A				Hass	1
		type B				Colín V-33, Fuerte	2
24. (+)	**A**	**Flower: nectary**					
QL	**(e)**	sessile				Ettinger	1
		stalked				Fuerte	2

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
25.	**A**	**Flower: style**					
(+)							
QL	**(e)**	straight				Fuerte	1
		kinked				Collinson	2
26.	**A**	**Flower: pollen**					
QL	**(f)**	absent				Collinson	1
		present				Aguilar, Fuerte, Hass	9
27.	**A**	**Sepal: pubescence of inner surface**					
QL	**(b)**	absent				Pollock	1
	(e)	present				Duke, Hass	9
28.	**A**	**Sepal: density of pubescence of inner surface**					
QN	**(b)**	sparse				Hass	3
	(e)	medium					5
		dense				Duke	7
29. **(*)**	**A**	**Mature fruit: length**					
QN	**(g)**	very short				Mexicola, Northrup	1
		short				Dickinson, Edranol, Fuerte	3
		medium				Avis, Hellen	5
		long				Cellon's Hawaii Seedling	7
		very long				Lima Late, Telsen	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30. **(*)**	**A**	**Mature fruit: maximum diameter**					
QN	**(g)**	very small				Mexicola, Northrup	1
		small				Dickinson, Edranol, Fuerte	3
		medium				Avis, Hellen	5
		large				Cellon's Hawaii Seedling	7
		very large				Lima Late, Telsen	9
31. **(*)**	**A**	**Mature fruit: length/maximum diameter**					
QN	**(g)**	very small				Trapp	1
		small				Monroe	3
		medium				Carlsbad, Lima Late, Topa Topa	5
		large				#86	7
		very large				Telsen	9
32. **(+)**	**A**	**Mature fruit: shape of stalk end**					
PQ	**(g)**	broadly rounded				Esther, Hashimoto, Nimlioh	1
		rounded				Carlsbad, Edranol, Sharwil	2
		truncate				Lamb Hass, Mayo, Puebla	3
		pointed				Dickinson, Frazer	4
33. **(+)**	**A**	**Mature fruit: presence of neck**					
QL	**(g)**	absent				Hashimoto, Hass, Lamat	1
		present				Akbal, Fuerte, Horshim	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
34. **(+)**	**A**	**Mature fruit: stalk cavity**					
QL	**(g)**	absent				Jim, Sharwil, Wurtz	1
		present				Maxima, Simmonds, Trapp	9
35.	**A**	**Mature fruit: width of stalk cavity**					
QN	**(g)**	narrow				Colín V-33, Gil	3
		medium				Mayo	5
		broad				Maxima	7
36.	**A**	**Mature fruit: position of stalk**					
QN	**(g)**	along axis				G-22, Nabal, Simmonds	1
		slightly oblique				Fuerte, Rincon	2
		strongly oblique				Hayes, Whitsell	3
37. **(+)**	**A**	**Mature fruit: form at the stylar end in longitudinal section**					
PQ	**(g)**	pointed				Lamat	1
		rounded				Dickinson, Frazer, Hass	2
		truncate				Dade, Stewart, Trapp	3
		slightly depressed				Gordo, Irving, Nimlioh	4
		deeply depressed				Duke	5
38.	**A**	**Mature fruit: conspicuousness of lenticels**					
QN	**(g)**	inconspicuous or weak				Topa Topa	1
		medium				Fuerte	
		strong				Carlsbad, Stewart	2

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
39.	**A**	**Mature fruit: size of lenticels**					
QN	**(g)**	small				Rincon	3
		medium				Fuerte, Stewart	5
		large				Ettinger	7
40.	**A**	**Mature fruit: color of lenticels**					
PQ	**(g)**	white yellow				Biscayne Seedling	1
		yellow				Fuerte	2
		light green				Akbal	3
		brown				Aycock Red 3, Carlsbad	4
		red					5
41.	**A**	**Mature fruit: glossiness**					
QN	**(g)**	absent or weak				Fuerte, Horshim	1
		medium				Ettinger, Zutano	2
		strong				Simmonds, Topa Topa	3
42. **(*)**	**A**	**Mature fruit: surface**					
QN	**(g)**	very smooth				Duke, Simmonds, Topa Topa	1
		smooth				Bacon, Ettinger	3
		medium				Alboyce, Fuerte, Horshim	5
		rough				Hass, Whitsell	7
		very rough				Dickinson	9
43.	**A**	**Mature fruit: persistence of perianth**					
QN	**(g)**	absent or weak				Hass	1
		medium				Colín V-33, Lypps	2
		strong				Irving, Jim	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
44.	**A**	**Pedicel: conspicuousness of junction with peduncle**					
QL	**(h)**	inconspicuous				Alboyce	1
		conspicuous				Hass, Nabal, Topa Topa	2
45. **(*)**	**A**	**Pedicel: length**					
QN	**(h)**	short				Pollock	3
		medium				Fuerte	5
		long				G-22, Hass	7
46. **(+)**	**A**	**Pedicel: thickness on junction with peduncle**					
QL	**(h)**	same				Ettinger, Simmonds	1
		larger				Collinson, Dade	2
47. **(*)** **(+)**	**A**	**Pedicel: shape**					
QL	**(h)**	cylindrical				Horshim, Iriet, Teague	1
		conical				Dunedin, Edranol, Monroe	2
48. **(*)** **(+)**	**A**	**Pedicel: “nailhead”**					
QL	**(h)**	absent				Duke, Edranol, Wurtz	1
		present				Maxima, Pollock	9
49.	**A**	**Pedicel: color**					
PQ	**(h)**	yellow				Aycock Red 3, Duke	1
		yellow green				Hass, Iriet	2
		green				Alboyce, Lamat	3
		green brown				Horshim	4
		reddish				Wurtz	5

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
50.	**A**	**Pedicel: surface**					
QL	**(h)**	smooth				Duke, Ferdyn, Topa Topa	1
		wrinkled				Edranol, Ettinger	2
51. **(*)**	**A**	**Ripe fruit: color**					
PQ	**(i)**	yellow green				Melendez	1
		light green				Marsheline, Mayo	2
		medium green				Greengold, Rincon, Zutano	3
		dark green				Ahaheim, Colín V-33, Edranol	4
		reddish				Los Moros	5
		medium purple					6
		dark purple or black				Hass, Topa Topa	7
52. **(*)**	**A**	**Ripe fruit: thickness of skin**					
QN	**(i)**	very thin				Mexicola, Topa Topa	1
		moderately thin				Colín V-33, Fuerte	3
		medium				Edranol	5
		moderately thick				Hass	7
		very thick				Dickinson	9
53. **(+)**	**A**	**Ripe fruit: consistency of peel**					
QL	**(i)**	membranous				Ettinger, Teague, Topa Topa	1
		leathery				Edranol, Pollock, Santana	2
		corky				G-22, Nabal	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
54. **(+)**	**A**	**Ripe fruit: adherence of peel to flesh**					
QN	**(i)**	weak				Edranol, Fuerte	1
		medium				Sharwil	2
		strong				Ettinger, Nabal, Teague	3
55.	**A**	**Ripe fruit: main color of flesh**					
PQ	**(i)**	whitish				Hazzard	1
		cream				Bacon, Ettinger, Zutano	2
		yellow				Hayes, Nabal	3
		light green				G-6, San Miguel	4
56.	**A**	**Ripe fruit: color of layer next to peel**					
PQ	**(i)**	light green				Santana	1
		medium green				Hass, Sharwil, Sir Prize	2
		yellow green				Duke	3
57.	**A**	**Ripe fruit: width of layer next to peel**					
QN	**(i)**	narrow				Duke, Santana	3
		medium				Colín V-33, Fuerte, Santana	5
		broad				Edranol, Reed, Whitsell	7
58.	**A**	**Ripe fruit: conspicuousness of fibers in flesh**					
QL	**(i)**	inconspicuous				Fuerte, Santana	1
		conspicuous				Edranol, Ettinger, Ryan	2

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
59.	**A**	**Ripe fruit: consistency of the flesh**					
PQ	**(i)**	watery				Simmonds	1
		buttery				Fuerte, Hass	2
		doughy				Fundación II	3
		granular					4
60.	**A**	**Ripe fruit: anise aroma of flesh**					
QL	**(i)**	absent				Aguilar, Hass, Lamb Hass	1
		present				Mexicola	9
61.	**A**	**Ripe fruit: setting of seed in cavity**					
QL	**(i)**	loose				Duke, Simmonds, Zutano	1
		tight				Colín V-33, Hass, Nabal	2
62.	**A**	**Ripe fruit: ratio fruit length/seed length**					
QN	**(i)**	very small				Toltec	1
		small				Bacon, Ettinger	3
		medium				Hashimoto, Hass, Lamat	5
		large				T181	7
		very large				Carlsbad	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
63. **(+)**	**A**	**Seed: general shape in longitudinal section**					
PQ	**(i)**	elliptic				Jan Boyce, Lima Late, Topa Topa	1
		ovate				Anaheim, Colín V-33, Rincon	2
		circular				Lamat, Lamb Hass, Mayapan	3
		oblate				Hayes, McDonald, Suardia	4
		depressed oblate				Carlsbad, Nowels	5
		triangular				Simmonds, Telsen, Zutano	7
64.	**A**	**Seed: shape in cross section**					
QL	**(i)**	circular				Fuerte	1
		elliptic				Ryan	2
65.	**A**	**Seed coat: adherence**		**to be considered for deletion**			
QL	**(i)**	absent				Horshim	1
		to embryo				Edranol, Hass	2
		to flesh				Ettinger	3
66.	**A**	**Seed coat: surface**					
QN	**(i)**	smooth or slightly wrinkled				Hass	1
		moderately wrinkled				Lula	2
		strongly wrinkled				Trapp	3
67.	**A**	**Cotyledon: surface**					
PQ	**(i)**	smooth				Bacon	1
		wrinkled				Collinson	2
		strongly wrinkled				Trapp	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
68.	**A**	**Time of beginning of flowering**					
QN		early				Duke	3
		medium				Fuerte	5
		late				Hass	7
69. (*)	**A**	**Time of fruit maturity for harvesting**					
QN	**(g)**	very early				Topa Topa	1
		early				Ettinger	3
		medium				Fuerte	5
		late				Hass, Ryan	7
		very late				Reed	9
70.	**B**	**Seed multiple sprouting**					
QL		absent				Hass	1
		present				Lula	9

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Young shoot / Young leaf: All 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) Pubescence: All observations on pubescence should be made with the aid of a magnifying glass.

(c) Leaf: Unless otherwise indicated, all observations on the leaf should be made on mature leaves from branches which are neither bearing fruit nor showing signs of new flush on the outside of the tree. They should be made in the middle third of the current season's growth.

(d) Inflorescence: All observations on the inflorescence should be made at the time of full flowering.

(e) Flower: All observations on the flower should be made during female opening. To determine the flowering type of a variety, the average night and day minimum temperatures should not be below 15 °C and 25 °C, respectively. This last is a relevant characteristic that can clearly help to differentiate a variety and in avocado description is one of the first trait that is used in commercial avocado production to select a variety as pollen source.

(f) Pollen: Observations on the pollen should be made at anther dehiscence of the male stage flower.

(g) Mature fruit: The mature fruit is defined as the fruit ready for harvesting.

(h) Pedicel: All observations on the pedicel should be made on mature fruits.

(i) Ripe fruit, seed, cotyledon: observations on the ripe fruit, seed and cotyledon which should be made when the fruit is ready for eating.

8.2 Explanations for individual characteristics

Ad. 4: Shoot: length of internode

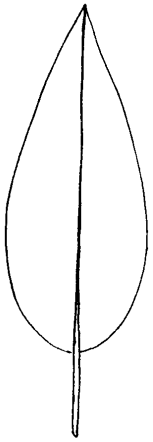
To be observed on the middle part of the shoot, after the current season's growth has stopped.

Ad. 7: Leaf blade: twisting

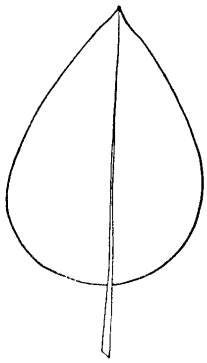
1
absent

9
present

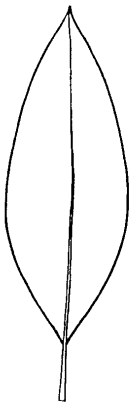
Ad. 11: Leaf blade: shape



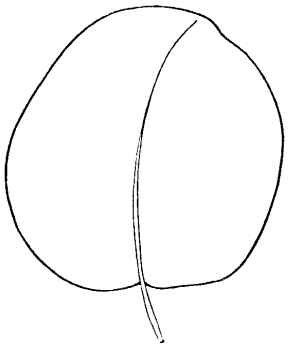
1
lanceolate



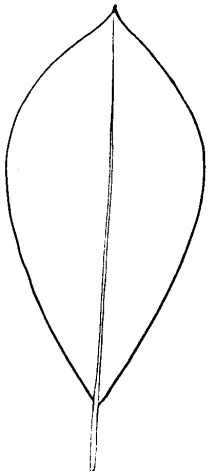
2
ovate



3
elliptic

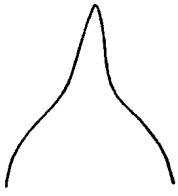


4
circular

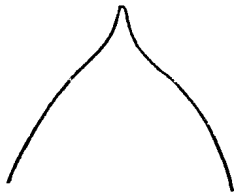


5
obovate

Ad. 12: Leaf blade: shape of apex



1
caudate

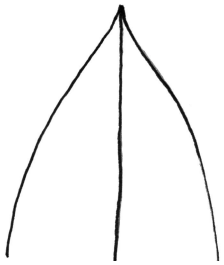


2
acuminate

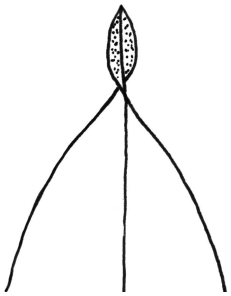
3
acute

4
rounded

Ad. 13: Leaf blade: twisting of apex

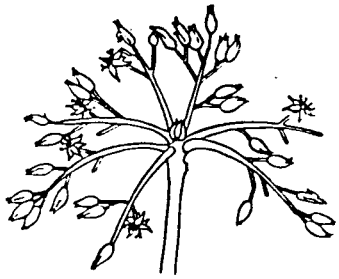


1
absent



9
present

Ad. 21: Inflorescence: length of axis



3
short

5
medium

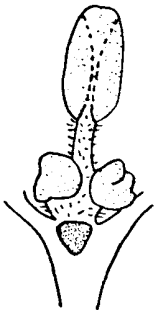
7
long

Ad. 23: Inflorescence: flowering type

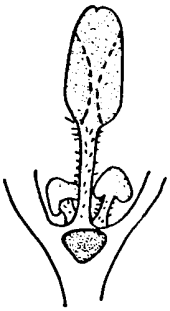
A flower from inflorescence

		Type A	Type B
Day 1	a.m.	open with female parts functional	closed
	p.m.	closed	open with female parts functional
Day 2	a.m.	closed	open with male parts functional
	p.m.	open with male parts functional	closed

Ad. 24: Flower: nectary



1
sessile



2
stalked

Ad. 25: Flower: style

1
straight

2
kinked

Ad. 32: Mature fruit: shape of stalk end

1
broadly rounded

2
rounded

3
truncate

4
pointed

Ad. 33: Mature fruit: presence of neck

1
absent

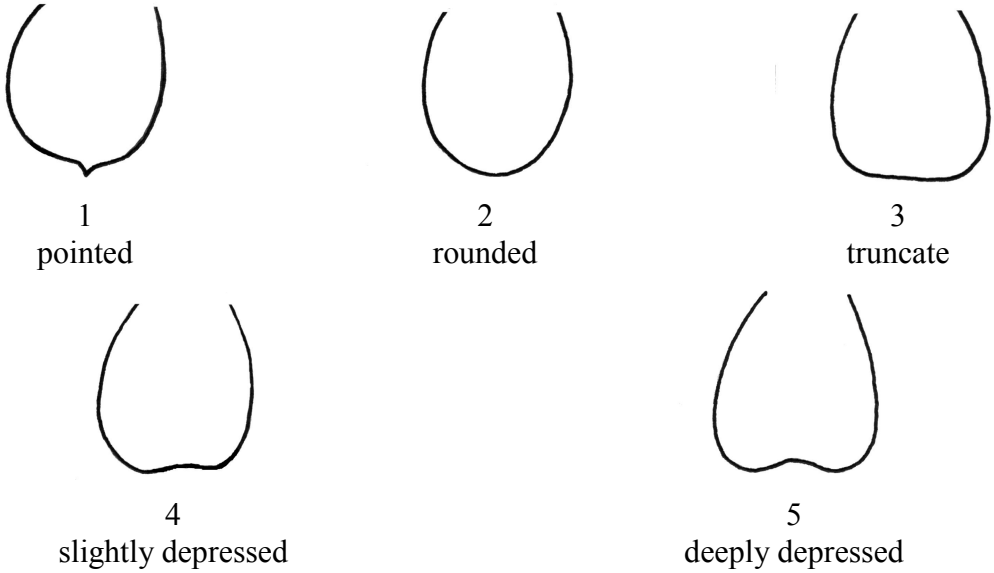
9
present

Ad. 34: Mature fruit: stalk cavity

1
absent

9
present

Ad. 37: Mature fruit: form at the stylar end in longitudinal section



1
pointed

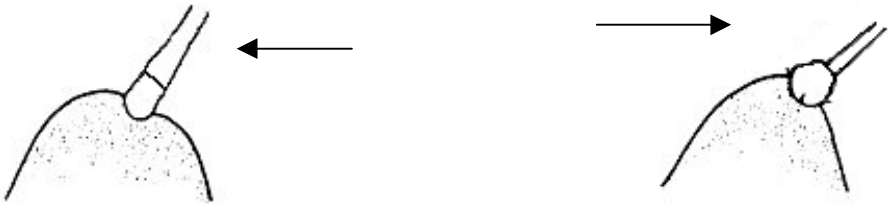
2
rounded

3
truncate

4
slightly depressed

5
deeply depressed

Ad. 46: Pedicel: thickness on junction with peduncle



1
same

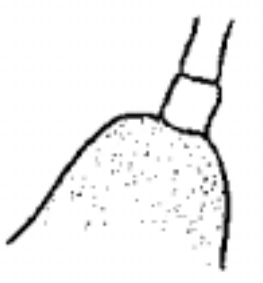
2
larger

Ad. 47: Pedicel: shape

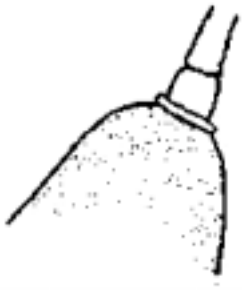
1
cylindrical

2
conical

Ad. 48: Pedicel: “nailhead”



1
absent

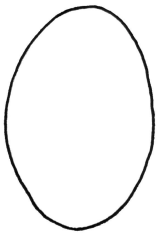


9
present

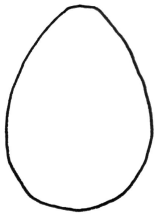
Ad. 53: Ripe fruit: consistency of peel
Ad. 54: Ripe fruit: adherence of peel to flesh

Should be evaluated by peeling the ripe fruit with the aid of the fingers.

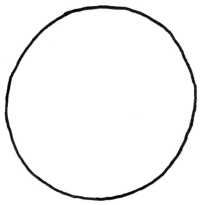
Ad. 63: Seed: general shape in longitudinal section



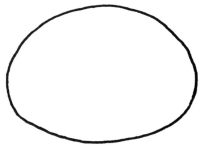
1
elliptic



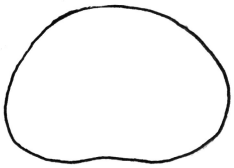
2
ovate



3
circular



4
oblate



5
depressed oblate

7
triangular

9. Literature

Avilán Rovira, L.; Avilán Rodríguez, L. A. 1997. Sistema de Información de las fichas de variedades de aguacate del banco de germoplasma – CENIAP. Manual de Usuario y Disco. Fondo Nacional de Investigaciones Agropecuarias, Centro Nacional de Investigaciones Agropecuarias-IICA/CReA/PROCIANDINO/FRUTHEX. Serie D No. 34. Maracay, Venezuela. 19 p.

Barrientos-Priego, A. F.; Ben-Ya'acov, A. D.; de la Cruz-Torres, E.; López-López, L.; Bufler, G.; Borys, M. W. 1991. "Descriptores para aguacate-Descriptors for avocado". Fundación Salvador Sánchez Colín-CICTAMEX, S. C. Coatepec Harinas, Estado de México. México 69 p.

IPGRI. 1995. Descriptors for Avocado (*Persea americana* Mill.). International Genetic Resources Institute (IPGRI-FAO). Rome, Italy. 52 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 Botanical Name	*Persea americana* Mill.
1.2 Common Name	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:

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

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

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

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

(c) unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)

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

4.1.4 Other [ ]
(please provide details)

4.2 Method of propagating the variety

4.2.1 Vegetative propagation

(a) grafting [ ]

(b) layering (clonal) [ ]

(c) other (state method) [ ]

4.2.2 Seed [ ]

4.2.3 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:

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 (2)	**Young shoot: color**		
	yellow green	Collinson	1[ ]
	green	Benedict, G-22, Teague	2[ ]
	reddish	Duke 6	3[ ]
5.2 (19)	**Leaf blade: anise aroma**		
	absent or very weak	Hass, Reed	1[ ]
	medium	Duke 7	2[ ]
	strong	Thomas	3[ ]
5.3 (47)	**Pedicel: shape**		
	cylindrical	Horshim, Iriet, Teague	1[ ]
	conical	Dunedin, Edranol, Monroe	2[ ]
5.4 (48)	**Pedicel: “nailhead”**		
	absent	Duke, Edranol, Wurtz	1[ ]
	present	Maxima, Pollock	9[ ]
5.5 (51)	**Ripe fruit: color**		
	yellow green	Melendez	1[ ]
	light green	Marsheline, Mayo	2[ ]
	medium green	Greengold, Rincon, Zutano	3[ ]
	dark green	Ahaheim, Colín V-33, Edranol	4[ ]
	reddish	Los Moros	5[ ]
	medium purple		6[ ]
	dark purple or black	Hass, Topa Topa	7[ ]

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

	Characteristics	Example Varieties	Note
5.6 (52)	**Ripe fruit: thickness of skin**		
	very thin	Mexicola, Topa Topa	1[ ]
	moderately thin	Colín V-33, Fuerte	3[ ]
	medium	Edranol	5[ ]
	moderately thick	Hass	7[ ]
	very thick	Dickinson	9[ ]
5.7 (69)	**Time of fruit maturity for harvesting**		
	very early	Topa Topa	1[ ]
	early	Ettinger	3[ ]
	medium	Fuerte	5[ ]
	late	Hass, Ryan	7[ ]
	very late	Reed	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	*Mature fruit: stalk cavity*	*e.g. note 1*	*note 9*
		e.g. absent	*present*

Comments:

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

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

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

Yes [ ] No [ ]

(If yes, please provide details)

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 photograph of the variety should accompany the Technical Questionnaire.

8. Authorization for release

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

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

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

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

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

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

(a) Microorganisms (e.g. virus, bacteria, phytoplasma) Yes [ ] 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]