TG/97/4(proj.3)
ORIGINAL: English
DATE: May 20, 2004

UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

AVOCADO

UPOV-Code: PERSE_AME

Persea americana Mill.

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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-fifth session,
to be held in Marquardt (Potsdam), Germany, from July 19 to 23, 2004

Alternative Names:*

Latin	*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 guidelines ("Test Guidelines") should be read in conjunction with document TG/1/3, "General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants" (hereinafter referred to as 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.]

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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
which should be tested on a standard, vegetatively propagated rootstock,
as specified by the competent authority.

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

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

3. Method of Examination

3.1 Number of Growing Cycles

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

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

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

3.2 Testing Place

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

3.3 Conditions for Conducting the Examination

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

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

3.3.1 Stage of Development for the Assessment

The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column of the Table of Characteristics. The stages of development denoted by each number are described at the end of Chapter 8.

3.3.2 Type of Observation – Visual or Measurement

The recommended method of observing the characteristic is indicated by the following key in the second column of the Table 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.

3.3.3 Type of Plot for Observation

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: spaced plants
B: special test.

3.3.4 Observation of Color by Eye

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 trees.

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 five trees or two parts taken from each of five trees .

3.6 Additional Tests

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

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

4.1.2 Consistent Differences

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

4.1.3 Clear Differences

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

4.2 Uniformity

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

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

4.3 Stability

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

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

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

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

(b) Ripe fruit: color of skin (characteristic 50);

(c) Ripe fruit: thickness of skin (characteristic 51);

(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 Section 6.1.2

(QL) Qualitative characteristic – see Section 6.3
(QN) Quantitative characteristic – see Section 6.3
(PQ) Pseudo-Qualitative characteristic – see Section 6.3

(a) – (h) See Explanations on the Table of Characteristics in Chapter 8, Section 8.1.

(+) See Explanations on the Table of Characteristics in Chapter 8, Section 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 A (a)**	**Young shoot: color of tip**					
PQ		yellow green				Collinson	1
		green				Benedict, G-22, Teague	2
		reddish				Duke 6	3
2.	**VG A (a)**	**Young shoot: presence of anthocyanin coloration**					
QL		absent				Benedict, Collinson	1
		present				Duke 6, Fuerte	9
3.	**VG A (a)**	**Young shoot: distribution of anthocyanin coloration**					
QL		uneven				Fuerte	1
		even				Duke 6	2
4.	**VG A (a)**	**Young shoot: color of lenticels**					
PQ		yellow					1
		green				Collinson, G-22	2
		red				Benedict, Duke 6	3
		purple					4
5.	**VG A (a) (b)**	**Young leaf: color of pubescence of petiole**					
PQ		white				Edranol	1
		yellow				Duke 6	2
		brown					3
		red brown				Fuerte	4

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6.	**MG A (c)**	**Leaf: attitude**					
QN		upwards				G-6	1
		outwards				Hass	2
		downwards					3
7.	**VG A**	**Leaf: twisting**					
(+)	**(c)**						
QL		absent				Fuerte	1
		present				Zutano	9
8.	**VG A**	**Leaf blade: cross section**	**TO_DELETE (MX)**				
(+)	**(c)**						
PQ		flat				Fuerte	1
		partly folded				Santana	2
		involute				Collinson	3
9.	**MG A (c)**	**Leaf blade: length**					
QN		short					3
		medium					5
		long					7
10.	**MG A (c)**	**Leaf blade: width**					
QN		narrow					3
		medium					5
		broad					7

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15.	**VG A (c)**	**Leaf blade: undulation of margin**					
QN		absent or very weak				Duke	1
		weak					3
		medium				Ettinger	5
		strong				Pinkerton	7
		very strong				Arturo	9
16.	**VG A (c)**	**Leaf blade: venation of upper surface**					
QL		inconspicuous				Duke	1
		conspicuous				Teague	2
17.	**VG A (c)**	**Leaf blade: venation on upper surface**					
QN		sunken				Topa Topa	1
		level				Fuerte	2
		raised				Edranol, Teague	3
18.	**VG A (b) (c)**	**Leaf blade: density of pubescence on the lower surface**					
QN		absent or sparse				Hass	1
		medium				Edranol	2
		dense				Duke, G-755c	3
19. (*)	**VG A (c)**	**Leaf blade: anise aroma**					
QL		absent				Edranol, Pollock	1
		present				Duke, Thomas	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20. **(+)**	**MG A (d)**	**Inflorescence: length of axis**					
QN		short				Bacon	3
		medium				Fuerte	5
		long				Pinkerton	7
21.	**VG A (d)**	**Inflorescence: color of lenticels**					
QL		green				Topa Topa	1
		red				Teague	2
22. **(+)**	**VG A (d)**	**Inflorescence: flowering type**					
QL		type A				Hass	1
		type B				Colín V-33, Fuerte	2
23. **(+)**	**VG A (e)**	**Flower: nectary**					
QL		sessile				Ettinger	1
		stalked				Fuerte	2
24. **(+)**	**VG A (e)**	**Flower: style**					
QL		straight				Fuerte	1
		kinked				Collinson	2
25. **(+)**	**VG A**	**Flower: pollen**					
QL		absent				Collinson	1
		present				Aguilar, Fuerte, Hass	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26.	**VG A (b) (e)**	**Sepal: pubescence**					
QL		absent				Pollock	1
		present				Duke, Hass	9
27.	**MG A (b) (e)**	**Sepal: density of pubescence**					
QN		sparse				Hass	3
		medium					5
		dense				Duke	7
28. (*)	**MG A (f)**	**Mature fruit: size**					
QN		small				Hass, Lamb Hass, Whitsell	3
		medium				Anaheim, Holiday, Monroe	5
		large				Akbal, General Bureau, Yon	7
29.	**MG A (f)**	**Mature fruit: ratio length/maximum diameter**					
QN		very small				Trapp	1
		small				Monroe	3
		medium				Carlsbad, Lima Late, Topa Topa	5
		large				#86	7
		very large				Telsen	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30. **(+)**	**VG** **A** **(f)**	**Mature fruit: shape of stalk end**					
PQ		broadly rounded				Esther, Hashimoto, Nimlioh	1
		narrowly rounded				Carlsbad, Edranol, Sharwil	2
		flat				Lamb Hass, Mayo, Puebla	3
		pointed				Dickinson, Frazer	4
31. **(+)**	**VG** **A** **(f)**	**Mature fruit: presence of neck**	**NEW (MX)**				
		absent				Hashimoto, Hass, Lamat	1
		present				Akbal, Horshim, Tensen	9
32. **(+)**	**VG** **A** **(f)**	**Mature fruit: stalk cavity**					
QL		absent				Jim, Sharwil, Wurtz	1
		present				Maxima, Simmonds, Trapp	9
33.	**MG** **A** **(f)**	**Mature fruit: width of stalk cavity**					
QN		narrow				Colín V-33, Gil	3
		medium				Mayo	5
		broad				Maxima	7
34.	**VG** **A** **(f)**	**Mature fruit: position of stalk**					
QL		along axis				G-22, Nabal, Simmonds	1
		oblique				Anaheim, Whitsell, Zutano	2

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
35. **(+)**	**VG** **A** **(f)**	**Mature fruit: form at stylar end**					
PQ		pointed				Lamat	1
		rounded				Dickinson, Frazer, Hass	2
		truncate				Dade, Stewart, Trapp	3
		slightly depressed				Gordo, Irving, Nimlioh	4
		deeply depressed				Duke	5
36.	**VG** **A** **(f)**	**Mature fruit: conspicuousness of lenticels**					
QL		inconspicuous				Topa Topa	1
		conspicuous				Carlsbad, Ettinger, Stewart	2
37.	**MG** **A** **(f)**	**Mature fruit: size of lenticels**					
QN		small				Rincon	3
		medium				Fuerte, Stewart	5
		large				Ettinger	7
38.	**VG** **A** **(f)**	**Mature fruit: color of lenticels**					
PQ		white yellow				Biscayne Seedling	1
		yellow				Fuerte	2
		light green				Akbal	3
		brown				Aycock Red 3, Carlsbad	4
		red					5
39.	**VG** **A** **(f)**	**Mature fruit: distribution of lenticels**	**TO DELETE (MX) we have not detected this character not even in 'Sharwil'**				
QL		even				Duke, Rincon	1
		in linear bands				Sharwil	2

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
40.	**VG A (f)**	**Mature fruit: glossiness**					
QN		absent or weak				Fuerte, Horshim	1
		medium				Ettinger, Zutano	2
		strong				Simmonds, Topa Topa, Traspón	3
41. (*)	**VG A (f)**	**Mature fruit: texture of surface**					
QN		very smooth				Duke, Simmonds, Topa Topa	1
		smooth				Bacon, Ettinger	3
		medium				Alboyce, Fuerte, Horshim	5
		rough				Hass, Whitsell	7
		very rough				Dickinson, NB86	9
42.	**VG A (f)**	**Mature fruit: persistence of perianth**					
QN		absent or weak				Hass	1
		medium				Colín V-33, Lypps	2
		strong				Jim, Irving	3
43.	**VG A (g)**	**Pedicel: conspicuousness of junction with peduncle**					
QL		inconspicuous				Alboyce	1
		conspicuous				Hass, Nabal, Topa Topa	2
44. (*)	**MG A (g)**	**Pedicel: length**					
QN		short				Pollock	3
		medium				Fuerte	5
		long				G-22, Hass	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
45. **(+)**	**VG** **A** **(g)**	**Pedicel: thickness on junction with peduncle**					
QL		same				Ettinger, Simmonds	1
		larger				Collinson, Dade, Trappson	2
46. **(*)** **(+)**	**VG** **A** **(g)**	**Pedicel: shape**					
QL		cylindrical				Horshim, Iriet, Teague	1
		conical				Dunedin, Edranol, Monroe	2
47. **(*)** **(+)**	**VG** **A** **(g)**	**Pedicel: “nailhead”**					
QL		absent				Duke, Edranol, Wurtz	1
		present				Pollock, Maxima	9
48.	**VG** **A** **(g)**	**Pedicel: color**					
PQ		yellow				Aycock Red 3, Duke	1
		yellow green				Hass, Iriet	2
		green				Alboyce, Lamat	3
		green brown				Horshim	4
		reddish				Wurtz	5
49.	**VG** **A** **(g)**	**Pedicel: surface**					
QL		smooth				Duke, Ferdyn, Topa Topa	1
		wrinkled				Edranol, Ettinger	2

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
50.	**VG A (h)**	**Ripe fruit: color of skin:**					
PQ		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
		purple					6
		dark purple or black				Hass, Topa Topa	7
51. (*)	**MG A (h)**	**Ripe fruit: thickness of skin**					
QN		very thin				Mexicola, Topa Topa	1
		thin				Colín V-33, Fuerte	3
		medium				Edranol	5
		thick				Hass	7
		very thick				Dickinson	9
52.	**VG A (h)**	**Ripe fruit: consistency of peel**					
PQ		membranous				Ettinger, Teague, Topa Topa	1
		leathery				Edranol, Pollock, Santana	2
		corky				G-22, Nabal	3
53.	**VG A (h)**	**Ripe fruit: adherence of peel to flesh**					
QN		weak				Edranol, Fuerte	1
		medium				Sharwil	2
		strong				Ettinger, Nabal, Teague	3

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
59.	**VG A (h)**	**Ripe fruit: anise aroma of flesh**					
QL		absent				Aguilar, Hass, Lamb Hass	1
		present				Mexicola	9
60.	**VG A (h)**	**Ripe fruit: setting of seed in cavity**					
QL		loose				Duke, Simmonds, Zutano	1
		tight				Colín V-33, Hass, Nabal	2
61.	**MG A (h)**	**Ripe fruit: ratio fruit length/seed length**					
QN		very small				Toltec	1
		small				Bacon, Ettinger	3
		medium				Hashimoto, Hass, Lamat	5
		large				T181	7
		very large				Carlsbad	9
62.	**MG A**	**Seed: width**	**TO DELETE (MX)**				
QN		narrow					3
		medium					5
		broad					7
62a.	**MG A (h)**	**Ripe fruit: ratio fruit width/seed width**	**NEW (MEX)**				
QN		very small				Monroe, Semil 38, Toltec	1
		small				Frazer	3
		medium				Northrup	5
		large				Avis, Nimlioh	7
		very large				Jan Boyce	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
63. **(+)**	**VG A**	**Seed: shape in longitudinal section**					
PQ		narrow elliptic				Irwing 59, Topa Topa	1
		moderate elliptic				Jan Boyce, Lima Late	2
		narrow ovate				TX756	3
		ovate				Anaheim, Colín V-33, Northrup	4
		broad ovate				Bacon, Helen, Rincon	5
		circular				Mayapan, Lamat, Lamb Hass	6
		oblate				Hayes, McDonald, Suardia	7
		depressed ovate				Carlsbad, Nowels	8
		narrow triangular				Aycock Red 3	9
		triangular				Simmonds, Telsen, Zutano	10
64.	**VG A**	**Seed: shape in cross section**					
QL		circular				Fuerte	1
		elliptic				Ryan	2
65.	**VG A**	**Seed coat: adherence**					
QL		absent				Horshim	1
		to embryo				Edranol, Hass	2
		to flesh				Ettinger	3
66.	**VG A**	**Seed coat: surface**					
QL		smooth				Hass	1
		wrinkled				Collinson	2

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
67.	**VG A**	**Cotyledon: surface**					
QN		smooth				Bacon	1
		slightly wrinkled				Collinson	2
		strongly wrinkled				Trapp	3
68.	**VS A**	**Time of beginning of flowering**					
QN		early				Duke	3
		medium				Fuerte	5
		late				Hass	7
69. (*)	**VS 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.	**VG 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 on the outside of the tree which are neither bearing fruit nor showing signs of new flush. Leaves should be taken from the middle third of the current season's growth.

(d) 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.

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

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

(h) Ripe fruit: The ripe fruit is defined as the fruit ready for eating .

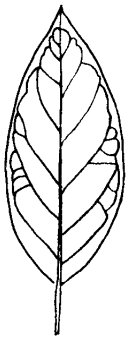
8.2 Explanations for individual characteristics

Ad. 7: Leaf: twisting

1
absent

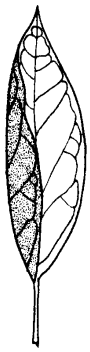
9
present

Ad. 8: Leaf blade: cross section **TO DELETE (MX)**



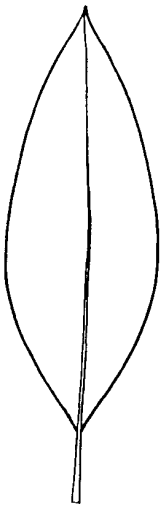
1
flat

2
partly folded

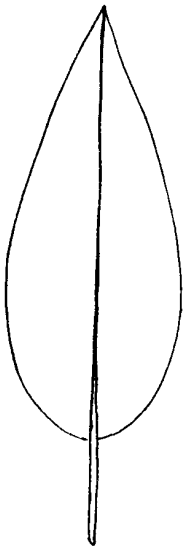


3
involute

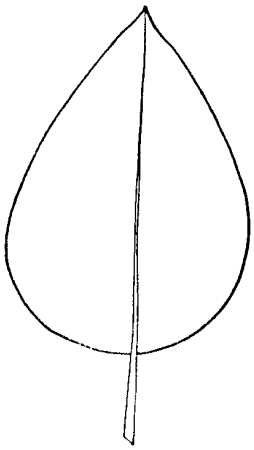
Ad. 12: Leaf blade: shape



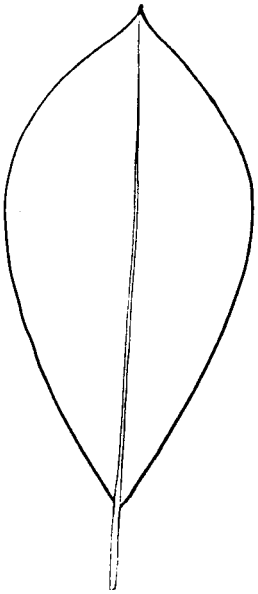
3
elliptic



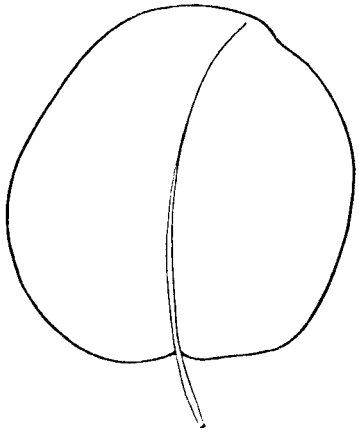
1
lanceolate



2
ovate

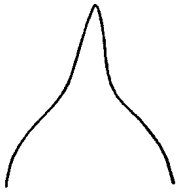


5
obovate



4
circular

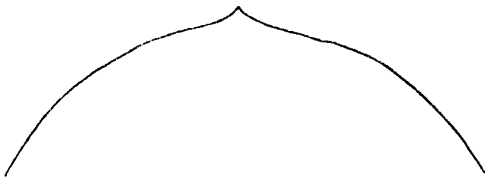
Ad. 13: Leaf blade: shape of apex



1
caudate

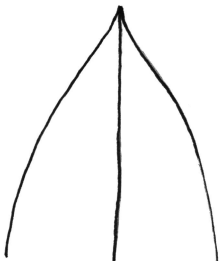
2
acuminate

3
acute

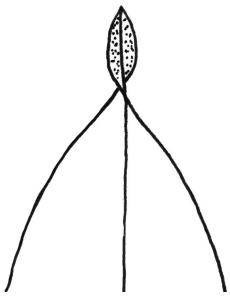


4
rounded

Ad. 14: Leaf blade: twisting of tip

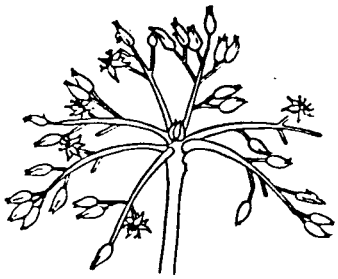


1
absent



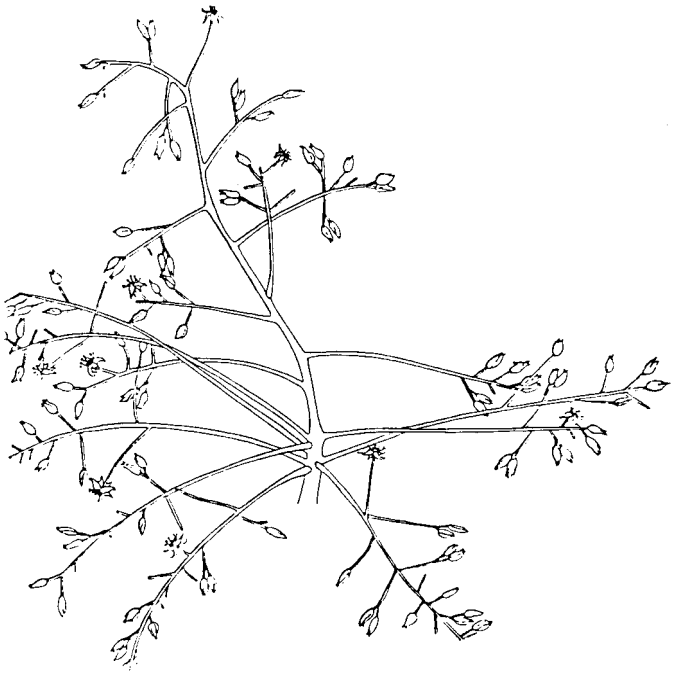
9
present

Ad. 20: Inflorescence: length of axis



3
short

5
medium



7
long

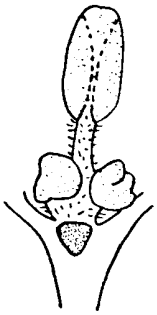
Ad. 22: Inflorescence: type

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.

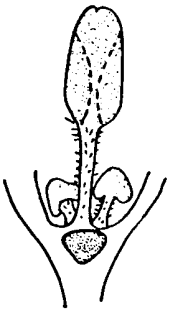
A flower from inflorescence

Type		A	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. 23: Flower: nectary



1
sessile



2
stalked

Ad. 24: Flower: style

1
straight

2
kinked

Ad. 25: Flower: pollen: Observations on the pollen should be made at anther dehiscence of the male stage flower.

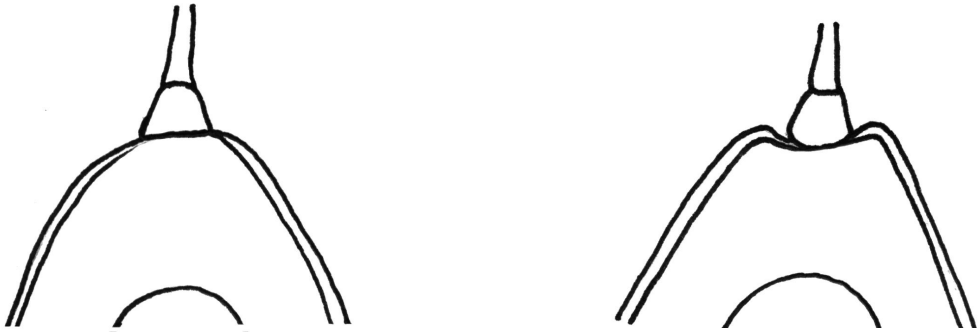
Ad. 30: Mature fruit: shape of stalk end

1 broadly rounded | 2 narrowly rounded | 3 flat | 4 pointed

Ad. 31: Mature fruit: presence of neck

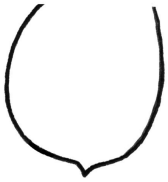
1 absent | 9 present

Ad. 32: Mature fruit: stalk cavity

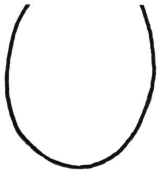


1 absent | 9 present

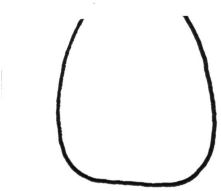
Ad. 35: Mature fruit: form at stylar end



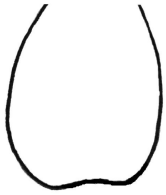
1
pointed



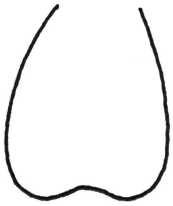
2
rounded



3
truncate

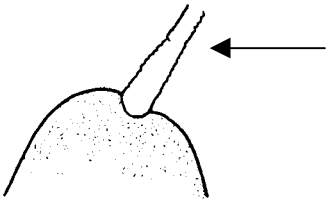


4
slightly depressed

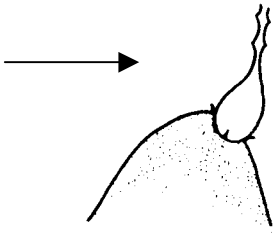


5
deeply depressed

Ad. 45: Pedicel: thickness on junction with peduncle

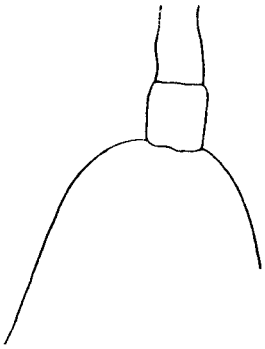


1
same

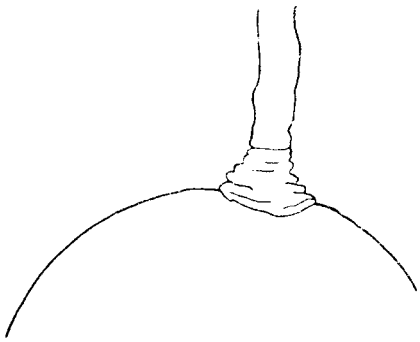


2
larger

Ad. 46: Pedicel: shape



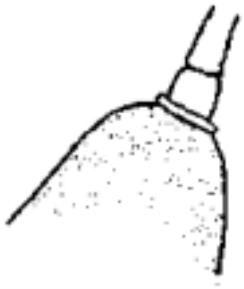
1
cylindrical



2
conical

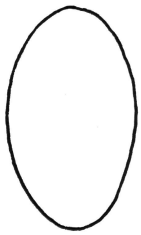
Ad. 47: Pedicel: “nailhead”

1
absent

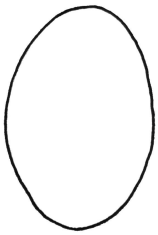


9
present

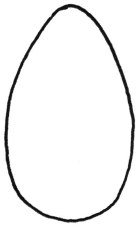
Ad. 63: Seed: shape in longitudinal section



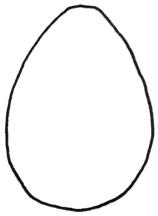
1
narrow elliptic



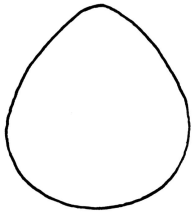
2
elliptic



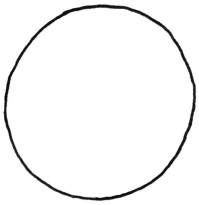
3
narrow ovate



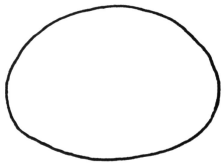
4
ovate



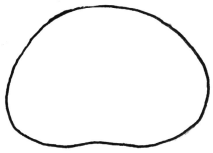
5
broad ovate



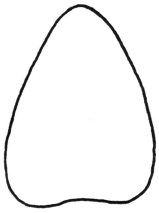
6
circular



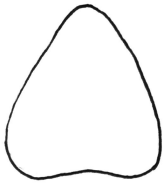
7
oblate



8
depressed oblate



9
narrow trangular



10
triangular

9. Literature

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 agucate-Descriptors for avocado". Fundación Salvador Sánchez Colín-CICTAMEX, S. C. Coatepec Harinas, Estado de México. México 69 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 *Latin 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) other (state method) [ ]

4.2.2 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 (1)	**Young shoot: color of tip**		
	yellow green	Collinson	1[ ]
	green	Benedict, G-22, Teague	2[ ]
	reddish	Duke 6	3[ ]
5.2 (19)	**Leaf blade: anise aroma**		
	absent	Edranol, Pollock	1[ ]
	present	Duke, Thomas	9[ ]
5.3 (46)	**Pedicel: shape**		
	cylindrical	Horshim, Iriet, Teague	1[ ]
	conical	Dunedin, Edranol, Monroe	2[ ]
5.4 (47)	**Pedicel: “nailhead”**		
	absent	Duke, Edranol, Wurtz	1[ ]
	present	Pollock, Maxima	9[ ]

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

	Characteristics	Example Varieties	Note
5.5 (50)	**Ripe fruit: color of skin**		
	yellow green	Melendez	1[ ]
	light green	Mayo, Marsheline	2[ ]
	medium green	Greengold, Rincon, Zutano	3[ ]
	dark green	Ahaheim, Colín V-33, Edranol	4[ ]
	reddish	Los Moros	5[ ]
	purple		6[ ]
	dark purple or black	Hass, Topa Topa	7[ ]
5.6 (51)	**Ripe fruit: thickness of skin**		
	very thin	Mexicola, Topa Topa	1[ ]
	thin	Colín V-33, Fuerte	3[ ]
	medium	Edranol	5[ ]
	thick	Hass	7[ ]
	very thick	Dickinson	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	*Leaf blade: anise aroma*	*e.g. note 1*	*note 9*
		e.g. absent	*present*

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 Special conditions for the examination of the variety

7.2.1 Are there any special conditions for growing the variety or conducting the examination?

Yes [ ] No [ ]

7.2.2 If yes, please give 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.

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 or pesticide) Yes [ ] No [ ]

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

Please provide details of 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]