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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

COFFEE

(*Coffea arabica* L,
Coffea canephora Pierre ex A. Froehner
and their interespecific hybrids)

*

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

to be considered by the
Technical Working Party for Fruit Crops at its thirty-fourth session
to be held in Niagara Falls, Canada, from September 29 to October 3, 2003

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Alternative Names:*

Latin	*English*	*French*	*German*	*Spanish*
Coffea arabic, L; *Coffea canephora* Pierre	Coffee	Caféier	Kaffee	Cafeto

ASSOCIATED DOCUMENTS

These 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 *Coffea arabica* L. (Arabica type), *Coffea canephora* Pierre(Robusta type) and their interespecific hybrids.

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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 plants no older than one year.

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

a) *Coffea arabica*: 20 seedling plants;

b) *Coffea canephora*: i) Vegetatively propagated varieties: 5 one -year-old plants;
ii) Seed propagated varieties: 30 one -year-old plants;

c) Interespecific hybrids: i) Vegetatively propagated varieties: 5 one -year-old plants;
ii) Seed propagated varieties: 20 one -year-old plants.

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

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

3. Method of Examination

3.1 Duration of Tests

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

3.2 Testing Place

The tests should normally be conducted at one place. If any characteristics of the variety, which are relevant for the examination of DUS, cannot be observed at that place, the variety may be tested at an additional place.

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. Observations should be made afte the third year of planting on a representative harvest cycle.

3.3.1 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
VG: visual assessment by a single observation of a group of plants or parts of plants

3.3.2 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 5, 20 or 30 plants according to section 2.3.

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

3.5.1 In the case of varieties resulting from crossing, unless otherwise indicated, all observations should be made on 5 plants or parts taken from each of 5 plants.

3.5.2 In the case of mutants, unless otherwise indicated, all observations should be made on 10 plants or parts taken from each of 10 plants. (Check consistency between the number of plants requested and the number of plants examined. See sections 2.3, and 3.4 and 3.5)

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 minimum duration of tests recommended in section 3.1 reflects, in general, the need to ensure that any differences in a characteristic are sufficiently consistent.

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 *Coffea arabica* L*.*: For the assessment of uniformity for varieties of *Coffea arabica* L. a population standard of 5% with an acceptance probability of at least 95% should be applied. In the case of a sample size of 20 plants, 3 off-types are allowed.

4.2.3 *Coffea canephora* Pierre ex A. Froehner*:* For the assessment of uniformity for varieties of *Coffea canephora* Pierre ex A. Froehner a population standard of 10% with an acceptance probability of at least 95% should be applied. In the case of a sample size of 5 plants (check: if this standard for uniformity applies to vegetatively propagated varieties too), two off-types are allowed. In the case of a sample size of 30 plants, 6 off-types are allowed.

4.2.4 Interespecific hybrids*:* For the assessment of uniformity for interespecific hybrids varieties, a population standard of { x }% and an acceptance probability of at least { y } % should be applied. In the case of a sample size of { a } plants, [{ b } off-types are] / [1 off-type is] allowed.] To add uniformity standards for interespecific hybrids.

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.

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 is 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:

{…}(To add grouping characteristics)

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.

Example varieties are provided for varieties of *Coffea arabica* L. only.

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

VG-MG: see Section 3.3.1

(a) – (e) 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

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1.		**Plant: shape**					
(+)							
PQ	**(a)**	cylindrical				Catuaí, Mundo Novo	1
		conical				Vila Lobos	2
		cylindrical-conical				Acaiá	3
		inverted conical					4
2.		**Plant: height**					
(+)							
QN	**(a)**	very short				Vila Lobos	1
		short				IAPAR 59	3
		medium				Catuaí, Rubi, Topázio	5
		tall				Acaiá	7
		very tall				Mundo Novo	9
3.		**Plant: diameter of canopy**					
(+)							
QN	**(a)**	very small				Vila Lobos	1
		small				IAPAR 59	3
		medium				Catuaí, Rubi, Topázio	5
		large				Acaiá	7
		very large				Mundo Novo	9
4.		**Plant: basal orthotropic branching**			To add: explanations and example varieties		
QN		weak					3
		medium					5
		strong					7

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
5.		**Plant: number of inflorescences per axil**					
QN		low				Típica	3
		medium				Bourbon	5
		high				Catuaí, Rubi, Topázio	7
6. **(+)**		**Stem (main and lateral): length of internodes**					
QN		short				IAPAR 59	3
		medium				Catuaí, Rubi, Topázio	5
		long				Mundo Novo	7
7.		**Plagiotropic branch: ramification**					
QN		weak				Acaiá	3
		medium				Mundo Novo	5
		strong				Catuaí, Rubi, Topázio	7
8. **(+)**		**Plagiotropic branch: attitude**			To provide explanation		
QN	**(a)**	erect					1
		semi-erect					3
		horizontal				Catuaí, Mundo Novo	5
		semi-drooping					7
9.		**Leaf: length**					
QN	**(b)**	short				Bourbon	3
		medium				Mundo Novo	5
		long				Obatã	7

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
10.		**Leaf: width**					
QN	**(b)**	narrow				Bourbon	3
		medium				Mundo Novo	5
		long				Obatã	7
11.		**Leaf: shape**					
(+)							
PQ	**(b)**	elliptic					1
		ovate					2
		lanceolate					3
12.		**Leaf: young leaf color**					
PQ		green				Catuaí	1
		green and bronze					2
		bronze				Rubi, Topázio	3
		purple					4
13.		**Leaf: mature leaf color**			Ask the possible existence of a state “green” in between states 1 and 2.		
PQ		light-green					1
		dark-green					2
		purple					3
14.		**Leaf: undulation of the margin**					
QL	**(b)**	absent				Laurina	1
		present				Mundo Novo	9

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
15.		**Leaf: degree of margin undulation**					
QN	**(b)**	slight					3
		medium				Mundo Novo, Catuaí	5
		strong					7
16.		**Leaf: depth of secondary vein**					
QN	**(b)**	shallow					3
		medium					5
		deep					7
17.		**Leaf: domatia**			To check the term:"domatia".		
	(b)	absent					1
		partially developed					2
		developed					3
18.		**Leaf: domatia pilosity**					
QL	**(b)**	absent					1
		present					9
19.		**Inflorescence: number of flowers**					
QN		low				Típica	3
		medium				Bourbon	5
		high				Catuaí, Rubi, Topázio	7
20. **(+)**		**Flower: pollen fertility**			To add explanation		
	(c)	absent					1
		present				Bourbon	9

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
21.		**Flower: crossing compatibility**			To add explanation with the method of assessment		
(+)							
	(c)	self-compatible					1
		partially compatible					2
		self-incompatible					3
22.		**Fruit: size**					
QN	**(d)**	very small				Mokka	1
		small				Bourbon Amarelo	3
		medium				Mundo Novo	5
		large				Acaiá	7
		very large				Maragogipe	9
23.		**Fruit: shape**					
(+)							
PQ	**(d)**	round				Mokka	1
		elliptic					2
		oblong				Mundo Novo	3
24.		**Fruit: color**					
PQ	**(d)**	yellow				Bourbon, Topázio	1
		orange-red					2
		light red				Mundo Novo, Rubi	3
		dark red					4
25.		**Fruit: sepal**					
QL	**(d)**	dehiscent				Bourbon Amarelo	1
		non-dehiscent					2

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
26.		**Fruit: level of branch junction**			To add explanation		
(+)							
QN	**(d)**	low					3
		medium				Mundo Novo	5
		high					7
27.		**Seed: length**			To add explanation and example varieties		
(+)							
QN	**(e)**	short					3
		medium					5
		long					7
28.		**Seed: width**					
QN	**(e)**	narrow				Acaiá	3
		medium				Mundo Novo	5
		wide				Catuaí	7
29.		**Seed: thickness**					
(+)							
QN	**(e)**	thin				Mokka, Ibara	3
		medium				Mundo Novo	5
		thick				Maragogipe	7
30.		**Seed: endosperm color**			To add example varieties		
QL		yellow					1
		green					2
31.		**Seed: shade of suber skin**			To check whether 3 states will describe better the characteristic	To add explanation and example vrieties	
(+)							
		light					1
		dark					2

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
32.		**Seed: degree of silver skin adherence**			To add explanation		
(+)							
QN		weak					3
		medium					5
		strong					7
33.		**Time of maturity (at 80% of mature fruits)**					
QN		very early					1
		early				Bourbon	3
		medium				Mundo Novo, Rubi	5
		late				Catuaí	7
		very late					9
34.		**First flowering**					
QN		early				Catuaí, Rubi, Topázio	3
		medium				Bourbon	5
		late				Mundo Novo	7
35.		**Fruit: juiciness of the mesocarp (for *Coffea canephora* only)**			To add explanation		
(+)							
QN		dry					3
		medium					5
		juicy					7
36.		**Seed: caffeine content**			To add explanation		
(+)							
QN		low				Laurina	3
		medium				Mundo Novo, Catuaí	5
		high				Canephora	7

Char. No.	Method of Examination	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
37.		**Seed: weight of 100 seeds (11% moisture)**					
(+)							
QN		low				Ibairi	3
		medium				Catuaí	5
		high				Acaiá	7

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 must be examined as indicated below:

(a) After the second yield from the third harvest on.
(b) Observations should be made in summer on fully developed leaves from the middle third of a well-developed current season shoot.
(c) Observations should be made on fully developed flowers at the beginning of anther dehiscence.
(d) Observations should be made at the time of harvest on ripen fruits unless otherwise stated.
(e) Must be measured from a sample of 20 seeds.

8.2 Explanations for individual characteristics

Ad. 3 Plant: canopy diameter

The measurement should correspond to the maximum diameter.

Ad. 5 Stem (main and lateral): length of internodes

The length of the internodes should be observed in the middle of the shoot.

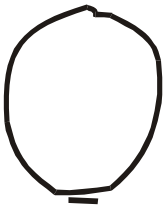
Ad. 11 Leaf: shape

1
elliptic

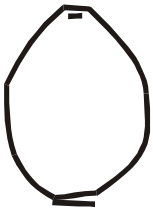
2
ovate

3
lanceolate

Ad. 23: Fruit: shape



1
round



2
elliptic

3
oblong

Ad. 29: Seed: thickness

The measurement must be taken on flat-type seeds.

Ad. 37: Seed: weight of 100 seeds (11% moisture)

Only flat-type seeds should be used for this evaluation.

9. Literature

TO ADD LITERATURE

10. Technical Questionnaire

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

	Application date: (not to be filled in by the applicant)

TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire

1.1.1 *Latin Name*	*Coffea arabica* L.	
1.1.2 Common Name	Arabica type coffee	[ ]
1.2.1 *Latin Name*	*Coffea canephora* Pierre	
1.2.2 Common Name	Robusta type coffee	[ ]
1.3.1 *Latin Name*	*Coffea arabica* x *C. canephora*	
1.3.2 Common Name	Interespecific hybrid	[ ]

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	

Breeder (if different from applicant)

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

3. Proposed denomination and breeder's reference

Proposed denomination (if available) [ ]

Breeder's reference [ ]

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) totally unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)

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

4.1.4 Other [ ]
(please provide details)

4.2 Method of propagating the variety

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
TO ADD CHARACTERISTICS		

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

6. Similar varieties and differences from these varieties

Please use the table, and space provided for comments, below 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		*(example to be inserted)*	*(example to be inserted)*
TO ADD EXAMPLES			

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 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

8. Authorization for release

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

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

9. Information on plant material to be examined.

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]