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Cocos nucifera L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Cocos nucifera</i> L.	Coconut	Cocotier	Kokosnuß	Cocotero

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.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Cocos nucifera* L..

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 mature fruits.

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

20 mature fruits.

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should be stated by the applicant.

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

3.1.3 The two independent growing cycles may be observed from a single planting, examined in two separate growing cycles.

3.1.4 The growing cycle is considered to be the period ranging from the beginning of development of an individual flower or inflorescence, through fruit development and concluding with the harvesting of fruit from the corresponding individual flower or inflorescence.

3.2 *Testing Place*

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

3.3 *Conditions for Conducting the Examination*

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

3.4 *Test Design*

Each test should be designed to result in a total of at least 12 trees, which should be divided between at least 2 replicates.

3.5 *Additional Tests*

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 *Distinctness*

4.1.1 General Recommendations

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

4.1.2 Consistent Differences

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

4.1.3 Clear Differences

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

4.1.4 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 12 plants or parts taken from each of 12 plants and any other observations made on all plants in the test, disregarding any off-type plants. In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 2.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the second column of the Table of Characteristics (see document TGP/9 "Examining Distinctness", Section 4 "Observation of characteristics"):

MG: single measurement of a group of plants or parts of plants

MS: measurement of a number of individual plants or parts of plants

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

VS: visual assessment by observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

"Visual" observation (V) is an observation made on the basis of the expert's judgment. For the purposes of this document, "visual" observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

4.2 *Uniformity*

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

4.2.2 The assessment of uniformity should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.3 *Stability*

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

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

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

- (a) Time of appearance of first inflorescence (characteristic 3)
- (b) Stem: height (characteristic 6)
- (c) Fruit: main color (characteristic 25)
- (d) Fruit: shape (characteristic 27)
- (e) Nut: shape (characteristic 28)

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

6. Introduction to the Table of Characteristics

6.1 *Categories of Characteristics*

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 States of Expression and Corresponding Notes

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

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

State	Note
small	3
medium	5
large	7

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

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

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 *Legend*

- (*) Asterisk characteristic – see Chapter 6.1.2
- QL Qualitative characteristic – see Chapter 6.3
- QN Quantitative characteristic – see Chapter 6.3
- PQ Pseudo-qualitative characteristic – see Chapter 6.3
- MG, MS, VG, VS – see Chapter 4.1.5
- (a)-(d) See Explanations on the Table of Characteristics in Chapter 8.1
- (+) See Explanations on the Table of Characteristics in Chapter 8.2

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
1.	VG/ MS	Young plant: number of leaves	Jeune plante : nombre de feuilles	Jungpflanze: Anzahl Blätter	Planta joven: número de hojas		
(+)							
QN	few	petit	wenige	pocas	Capi, Genjah Kuning Nias	3	
	medium	moyen	mittel	medio	Genjah Raja Brown, Híbrido Cancún	5	
	many	grand	viele	abundantes	Acapulco, Dalam Mapanget	7	
2.	MG	Young plant: time of leaf splitting	Jeune plante : époque de la division de la feuille	Jungpflanze: Zeitpunkt der Blatteilung	Planta joven: época de división de las hojas		
(*)							
(+)							
QN	early	précoce	früh	temprana	Dalam Sawarna	1	
	medium	moyenne	mittel	media	Dalam Tenga, Genjah Kuning Bali	2	
	late	tardive	spät	tardía		3	
3.	MG	Time of appearance of first inflorescence	Époque de l'apparition de la première inflorescence	Zeitpunkt des Erscheinens des ersten Blütenstandes	Época de aparición de la primera inflorescencia		
(*)							
(+)							
QN	early	précoce	früh	temprana	Brazilian Green Dwarf Jiqui, Genjah Tebing Tinggi, Malayan Red Dwarf, Malayan Yellow Dwarf	3	
	medium	moyenne	mittel	media	Dalam Mapanget, MATAG Hybrid Green	5	
	late	tardive	spät	tardía	Brazilian Tall Praia do Forte, Dalam Jebara, Malayan Tall, Tagnanan Tall	7	
4.	VG	Stem: bole	Tige : fût	Stamm: Fuß	Tallo: bola		
(+)							
QL	(a)	absent	absent	fehlend	ausente	Brazilian Green Dwarf Jiqui, Genjah Kuning Nias, Malayan Red Dwarf, Malayan Yellow Dwarf	1
		present	présent	vorhanden	presente	Capi, Donaji, Malayan Tall, Tagnanan Tall	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
5. (*) (+)	VG/MS	Stem: width of bole	Tige : largeur du fût	Stamm: Breite des Fußes	Tallo: anchura de la bola		
QN	(a)	small	petite	schmal	pequeña	Acapulco, Brazilian Tall Praia do Forte, Kelapa Hibrida Indonesia-1	1
		medium	moyenne	mittel	media	Brazilian Tall Praia do Forte, Dalam Mapanget, Híbrido Chactemal, Rennel Tall Green, West African Tall Green	3
		large	grande	breit	grande	Dalam Tenga, Felicitos, Malayan Tall, Tagnanan Tall	5
6. (*) (+)	VG/MS	Stem: height	Tige : hauteur	Stamm: Höhe	Tallo: altura		
QN	(a)	short	courte	niedrig	corto	Acapulco, Brazilian Green Dwarf Jiqui, Malayan Red Dwarf, Malayan Yellow Dwarf	3
		medium	moyenne	mittel	medio	Híbrido Cancún, Rennel Tall Green	5
		tall	haute	hoch	alto	Brazilian Tall Praia do Forte, Escondido, Tagnanan Tall	7
7. (*) (+)	VG/MS	Stem: width	Tige : largeur	Stamm: Breite	Tallo: anchura		
QN	(a)	narrow	étroite	schmal	estrecho	Brazilian Green Dwarf Jiqui, Malayan Red Dwarf, Malayan Yellow Dwarf	3
		medium	moyenne	mittel	medio	Rennel Tall Green	5
		broad	large	breit	ancho	Brazilian Tall Praia do Forte, Malayan Tall, Tagnanan Tall	7
8. (*) (+)	VG	Leaf: attitude of lower leaves	Feuille : port des feuilles de la base	Blatt: Haltung der unteren Blätter	Hoja: porte de las hojas inferiores		
QN	(a)	upwards	dressées	aufwärts gerichtet	orientadas hacia arriba		1
		outwards	horizontales	abstehend	orientadas hacia el exterior	Malayan Tall, Tagnanan Tall	2
		downwards	retombantes	abwärts gerichtet	orientadas hacia abajo	Brazilian Green Dwarf Jiqui, Malayan Red Dwarf, Malayan Yellow Dwarf	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
9. (*) (+)	VG/ MS	Leaf: length of rachis	Feuille : longueur du rachis	Blatt: Länge der Spindel	Hoja: longitud del raquis		
QN	(a)	short	court	kurz	corto	Acapulco, Brazilian Green Dwarf Jiqui, Genjah Kuning Nias, Pandan Aromatic Dwarf	3
		medium	moyen	mittel	medio	Híbrido Chactemal, Kelapa Hibrida Indonesia-3, Malayan Red Dwarf, Malayan Yellow Dwarf	5
		long	long	lang	largo	Brazilian Tall Praia do Forte, Dalam Palu, Escondido, Rennel Tall Green	7
10.	VG/ MS	Leaf: number of leaflets	Feuille : nombre de folioles	Blatt: Anzahl Blattfiedern	Hoja: número de folíolos		
QN	(a)	few	petit	wenige	pocos	Acapulco, Brazilian Green Dwarf Jiqui, Genjah Kuning Nias, Malayan Yellow Dwarf	3
		medium	moyen	mittel	medio	Dalam Jepara, Híbrido Ordaz, Rennel Tall Green	5
		many	grand	viele	abundantes	Brazilian Tall Praia do Forte, Dalam Takome, Gigante, West African Tall Green	7
11. (+)	VG/ MS	Leaflet: length	Foliole : longueur	Blattfieder: Länge	Folíolo: longitud		
QN	(a)	short	courte	kurz	corto	Brazilian Green Dwarf Jiqui, Costa Chica, Dalam Tebing Tinggi, Felicitos, Genjah Kuning Nias, Pandan Aromatic Dwarf, Rennel Tall Green	3
		medium	moyenne	mittel	medio	Dalam Tebing Tinggi, Felicitos, Rennel Tall Green	5
		long	longue	lang	largo	Brazilian Tall Praia do Forte	7
12. (+)	VG/ MS	Leaflet: width	Foliole : largeur	Blattfieder: Breite	Folíolo: anchura		
QN	(a)	narrow	étroite	schmal	estrecho	Acapulco, Brazilian Green Dwarf Jiqui, Genjah Kuning Bali	3
		medium	moyenne	mittel	medio	Dalam Mamuaya, Híbrido Cancún	5
		broad	large	breit	ancho	Brazilian Tall Praia do Forte, Costa Chica, Dalam Kima Atas	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13.	VG	Leaflet: intensity of green color	Foliolle : intensité de la couleur verte	Blattfieder: Intensität der Grünfärbung	Folíolo: intensidad del color verde	
QN	(a)	light	claire	hell	claro	1
		medium	moyenne	mittel	medio	Brazilian Green Dwarf Jiqui 2
		dark	foncée	dunkel	oscuro	Malayan Red Dwarf, Malayan Yellow Dwarf, Tagnanan Tall 3
14.	VG/ MS (+)	Petiole: length	Pétiole : longueur	Blattstiel: Länge	Pecíolo: longitud	
QN	(a)	short	court	kurz	corto	Acapulco, Brazilian Green Dwarf Jiqui, Genjah Kuning Nias 3
		medium	moyen	mittel	medio	Costa Chica, Kelapa Hibrida Indonesia-1 5
		long	long	lang	largo	Brazilian Tall Praia do Forte, Dalam Tenga, Escondido 7
15.	VG/ MS (+)	Petiole: width	Pétiole : largeur	Blattstiel: Breite	Pecíolo: anchura	
QN	(a)	narrow	étroit	schmal	estrecho	Acapulco, Brazilian Green Dwarf Jiqui, Dalam Mapanget 3
		medium	moyen	mittel	medio	Genjah Raja Brown, Hibrido Ordaz 5
		broad	large	breit	ancho	Brazilian Tall Praia do Forte, Costa Chica, Dalam Kima Atas 7
16.	VG/ MS (+)	Petiole: thickness	Pétiole : épaisseur	Blattstiel: Dicke	Pecíolo: grosor	
QN	(a)	narrow	étroite	schmal	estrecho	Acapulco, Genjah Kuning Nias 3
		medium	moyenne	mittel	medio	Híbrido Cancún, Kelapa Hibrida Indonesia-2 5
		broad	large	breit	ancho	Dalam Bali, Escondido 7
17.	VG (+)	Petiole: main color	Pétiole : couleur principale	Blattstiel: Hauptfarbe	Pecíolo: color principal	
PQ	(a)	yellow	jaune	gelb	amarillo	Genjah Kuning Nias, Malayan Yellow Dwarf 1
		green	vert	grün	verde	Genjah Salak, Malayana Green Dwarf 2
		red	rouge	rot	rojo	Dalam Mapanget, Malayan Red Dwarf 3
		brown	brun	braun	marrón	Genjah Raja Brown, Malayan Brown Dwarf 4

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
18.	MS	Inflorescence: number of spikelets	Inflorescence : nombre d'épillets	Blütenstand: Anzahl Ährchen	Inflorescencia: número de espiguillas		
(+)							
QN	(b)	few	petit	wenige	pocos	Brazilian Tall Praia do Forte, Dalam Tenga, Felicitos, Rennel Tall Green	3
		medium	moyen	mittel	medio	Acapulco, Dalam Banyuwang, West African Tall Green	5
		many	grand	viele	abundantes	Dalam Kima Atas, Híbrido Ordaz	7
19.	MS	Inflorescence: number of spikelets with female flowers	Inflorescence : nombre d'épillets présentant des fleurs femelles	Blütenstand: Anzahl Ährchen mit weiblichen Blüten	Inflorescencia: número de espiguillas con flores femeninas		
(*)							
(+)							
QN	(b)	few	petit	wenige	bajo	Brazilian Tall Praia do Forte, Escondido	3
		medium	moyen	mittel	medio	Gigante, Malayan Red Dwarf, Malayan Yellow Dwarf	5
		many	grand	viele	alto	Acapulco, West African Tall Green	7
20.	VG/MS	Inflorescence: length of spikelet with female flowers	Inflorescence : longueur de l'épillet présentant des fleurs femelles	Blütenstand: Länge des Ährchens mit weiblichen Blüten	Inflorescencia: longitud de la espiguilla con flores femeninas		
(+)							
QN	(b)	short	court	kurz	corta	Acapulco, Genjah Raja Brown, Malayan Red Dwarf, Malayan Yellow Dwarf	3
		medium	moyen	mittel	media	Gigante, Kelapa Hibrida Indonesia-4, Tagnanan Tall	5
		long	long	lang	larga	Brazilian Tall Praia do Forte, Capi, Dalam Mapanget, Rennel Tall Green	7
21.	VG/MS	Inflorescence: length of central axis	Inflorescence : longueur de l'axe central	Blütenstand: Länge der Mittelachse	Inflorescencia: longitud del eje central		
(+)							
QN	(b)	short	court	kurz	corto	Acapulco, Genjah Raja Brown, Malayan Red Dwarf, Malayan Yellow Dwarf	3
		medium	moyen	mittel	medio	Híbrido Chactemal, Kelapa Hibrida Indonesia-4, West African Tall Green	5
		long	long	lang	largo	Brazilian Tall Praia do Forte, Dalam Mapanget, Gigante	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
22.	VG/ MS (+)	Peduncle: length	Pédoncule : longueur	Blütenstiel: Länge	Pedúnculo: longitud		
QN	(b)	short	court	kurz	corto	Brazilian Green Dwarf Jiqui, Donaji, Genjah Raja Brown, Malayan Yellow Dwarf	3
		medium	moyen	mittel	medio	Felicitos, Kelapa Hibrida Indonesia-4, Tagnanan Tall, West African Tall Green	5
		long	long	lang	largo	Brazilian Tall Praia do Forte, Dalam Mapanget, Híbrido Ordaz, Rennel Tall Green	7
23.	VG/ MS (+)	Peduncle: width	Pédoncule : largeur	Blütenstiel: Breite	Pedúnculo: anchura		
QN	(b)	narrow	étroit	schmal	estrecho	Acapulco, Genjah Raja Brown	3
		medium	moyen	mittel	medio	Híbrido Ordaz, Kelapa Hibrida Indonesia-4	5
		broad	large	breit	ancho	Brazilian Tall Praia do Forte, Dalam Mapanget, Gigante	7
24.	VG/ MS (+)	Bunch: number of fruits	Grappe : nombre de fruits	Fruchtstand: Anzahl Früchte	Racimo: número de frutos		
QN	(c)	few	petit	wenige	pocos	Brazilian Tall Praia do Forte, Costa Chica, Dalam Sawarna	3
		medium	moyen	mittel	medio	Capi, Dalam Mapanget	5
		many	grand	viele	abundantes	Brazilian Green Dwarf Jiqui, Dalam Takome, Híbrido Chactemal	7
25.	VG (* (+)	Fruit: main color	Fruit : couleur principale	Frucht: Hauptfarbe	Fruto: color principal		
PQ	(c)	yellow	jaune	gelb	amarillo	Acapulco, Genjah Kuning Bali	1
		green	vert	grün	verde	Brazilian Green Dwarf Jiqui, Genjah Hijau Nias	2
		red	rouge	rot	rojo	Genjah Merah	3
		brown	brun	braun	marrón	Genjah Raja Brown	4
26.	VG (+)	Fruit: aroma of coconut water	Fruit : arôme de l'eau de coco	Frucht: Aroma des Kokoswassers	Fruto: aroma del agua de coco		
QL	(c)	absent	absent	fehlend	ausente	Malayan Red Dwarf, Malayan Yellow Dwarf	1
		present	présent	vorhanden	presente	Pandan Aromatic Dwarf, Wenye4	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27. (*) (+)	VG Fruit: shape	Fruit : forme	Frucht: Form	Fruto: forma		
PQ (d)	ovate	ovale	eiförmig	oval	Brazilian Green Dwarf Jiqui, West African Tall Green	1
	circular	circulaire	kreisförmig	circular	Costa Chica, Tagnanan Tall Green	2
	elliptic	elliptique	elliptisch	elíptico	Acapulco, Malayan Red Dwarf, Malayan Yellow Dwarf	3
	obovate	obovale	verkehrt eiförmig	oboval	Brazilian Tall Praia do Forte	4
28. (*) (+)	VG Nut: shape	Noix : forme	Nuß: Form	Nuez: forma		
PQ (d)	oblate	aplatie	breitrund	achatada	Brazilian Green Dwarf Jiqui, Capi	1
	circular	circulaire	kreisförmig	circular	Acapulco, Malayan Red Dwarf, Malayan Yellow Dwarf	2
	elliptic	elliptique	elliptisch	elíptica	Brazilian Tall Praia do Forte, Donaji, West African Tall Green	3
	obovate	obovale	verkehrt eiförmig	oboval		4
29. (+)	VG/MS Shell: thickness	Coque : épaisseur	Schale: Dicke	Cáscara: grosor		
QN (d)	thin	mince	dünn	delgada	Genjah Kuning Nias, Malayan Red Dwarf, Malayan Yellow Dwarf	1
	medium	moyenne	mittel	media	Kelapa Hibrida Indonesia-1, Rennel Tall Green	2
	thick	épaisse	dick	gruesa	Dalam Tenga, West African Tall Green	3
30. (*) (+)	VG Meat: thickness	Chair : épaisseur	Fleisch: Dicke	Pulpa: grosor		
QN (d)	thin	mince	dünn	delgada	Acapulco, Genjah Kuning Jombang, Malayan Yellow Dwarf	1
	medium	moyenne	mittel	media	Dalam Sawarna, Gigante, Rennel Tall Green	2
	thick	épaisse	dick	gruesa	Dalam Mapanget, Hibrido Cancún, West African Tall Green	3

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

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

- (a) Tree, stem, petiole, leaf and leaflet: Observations should be made when the eleventh leaf scar appears (see photo of a plant with leaf scars). Observations on petiole, leaf and leaflet should be made on a mature leaf. Observations on leaflets should be made on 2 opposite leaflets in the middle of the rachis.

Leaf scars:



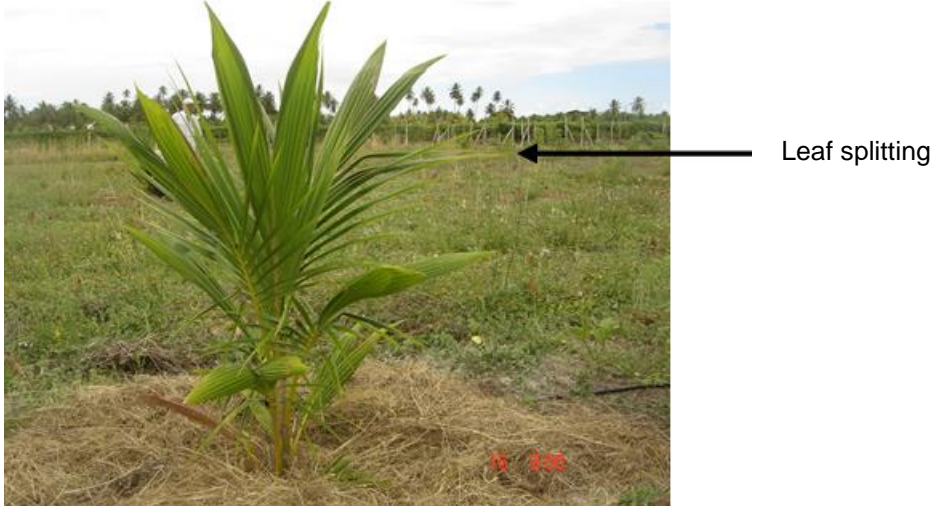
- (b) Peduncle and inflorescence: Observations on peduncle and inflorescence should be made after the appearance of the fifth inflorescence, when female flowers are receptive.
- (c) Bunch, fruit color and fruit aroma: Observations on the bunch, fruit color and fruit aroma should be made at the time of consumption as coconut water (at 6-7 months age fruit), after the appearance of the sixth bunch onwards.
- (d) Fruit, nut, shell and meat. Observations on the fruit, nut, shell and meat should be made at maturity for consumption as fresh meat (at 11-12 months age fruit), after the appearance of the sixth bunch onwards.

8.2 Explanations for individual characteristics

Ad. 1: Young plant: number of leaves

Should be observed 6 months after germination.

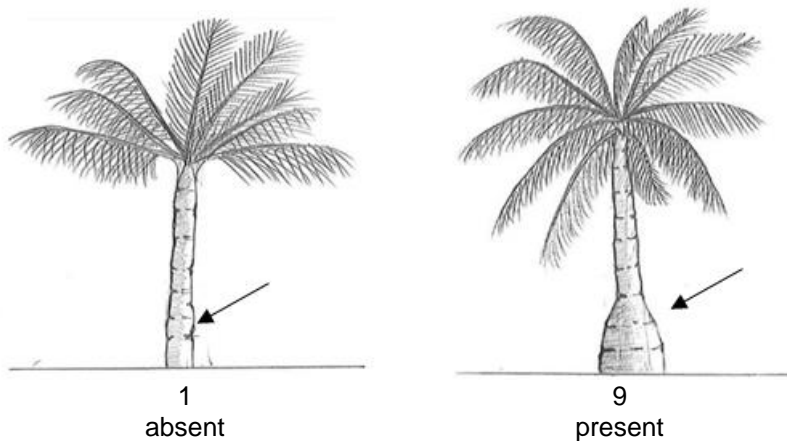
Ad. 2: Young plant: time of leaf splitting



Ad. 3: Time of appearance of first inflorescence

The time of appearance of the first inflorescence should be observed when 50% of the plants have emitted the first inflorescence.

Ad. 4: Stem: bole



Ad. 5: Stem: width of bole

The width of the bole should be assessed at its widest part.

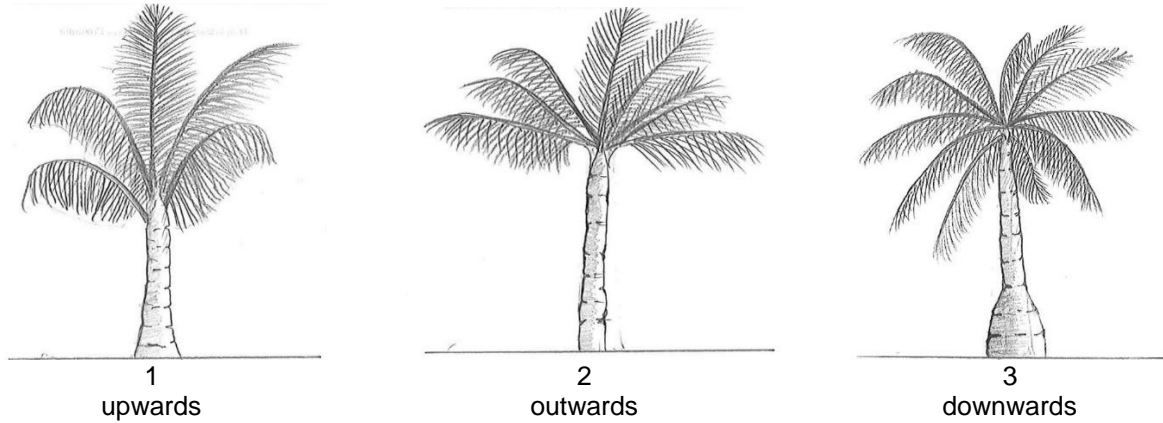
Ad. 6: Stem: height

The stem height should be observed from the ground to the top of the 11th scar (see picture 8.1 (a)).

Ad. 7: Stem: width

The stem width should be measured halfway from the ground to the top of the 11th scar.

Ad. 8: Leaf: attitude of lower leaves



Ad. 9: Leaf: length of rachis

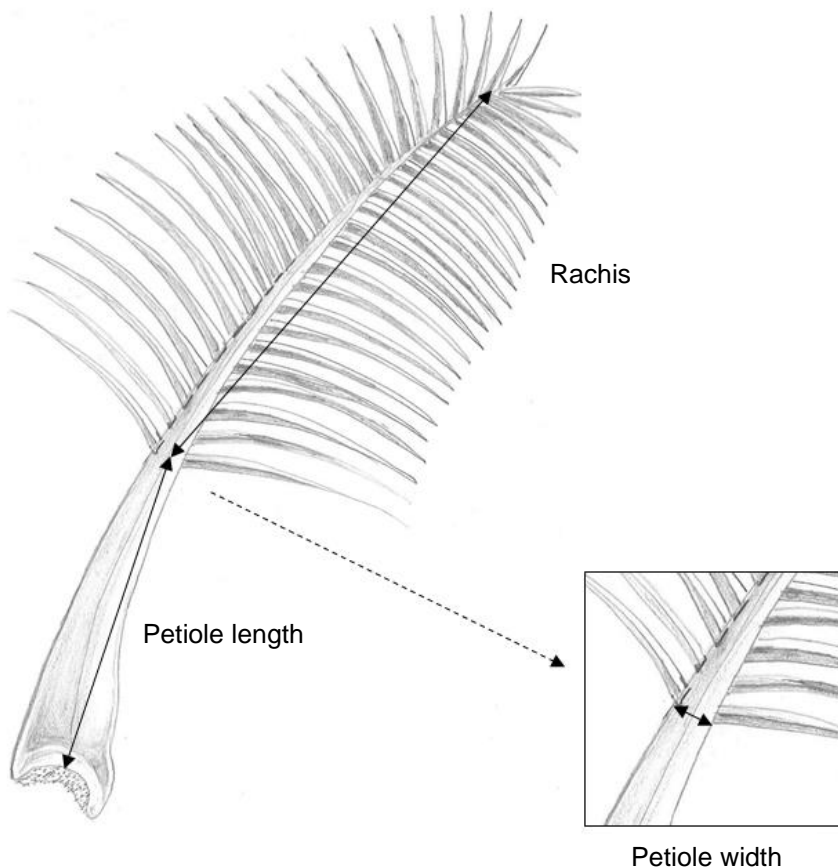
Ad. 14: Petiole: length

Ad. 15: Petiole: width

The length of the rachis should be observed from to the most proximal leaflet to the tip of the rachis.

The petiole length should be observed from base to the most proximal leaflet of the rachis.

The petiole width should be observed at the insertion of the first leaflet.

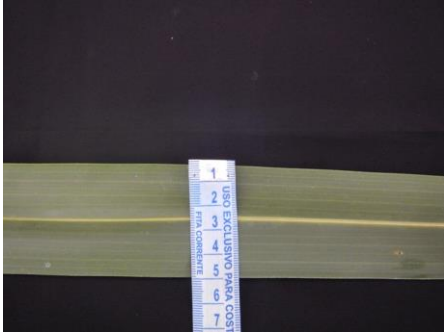


Ad. 11: Leaflet: length

The length of a leaflet should be assessed in the middle part of the rachis.

Ad. 12: Leaflet: width

The width of leaflet should be observed at the widest point of a leaflet in the middle of the rachis.



Ad. 16: Petiole: thickness

The petiole thickness should be observed at the insertion of the first leaflet.



Ad. 17: Petiole: main color

The main color of the petiole should be observed approximately 10 cm below the first leaflet insertion.

The main color is the color with the largest surface area. In cases where the areas of the main and secondary color are too similar to reliably decide which color has the largest area, the darkest is considered to be the main color.

Ad. 18: Inflorescence: number of spikelets

The number of spikelets is assessed by counting after removing them from the inflorescence.



Ad. 19: Inflorescence: number of spikelets with female flowers

The number of spikelets with female flowers is assessed by counting after removing them from the inflorescence



Female flower

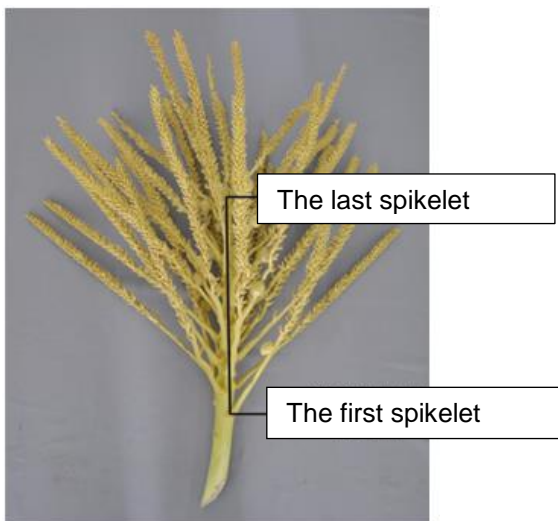
Ad. 20: Inflorescence: length of spikelet with female flowers

The length of the spikelet with female flowers should be assessed on the first spikelet with female flowers from the base of the inflorescence.

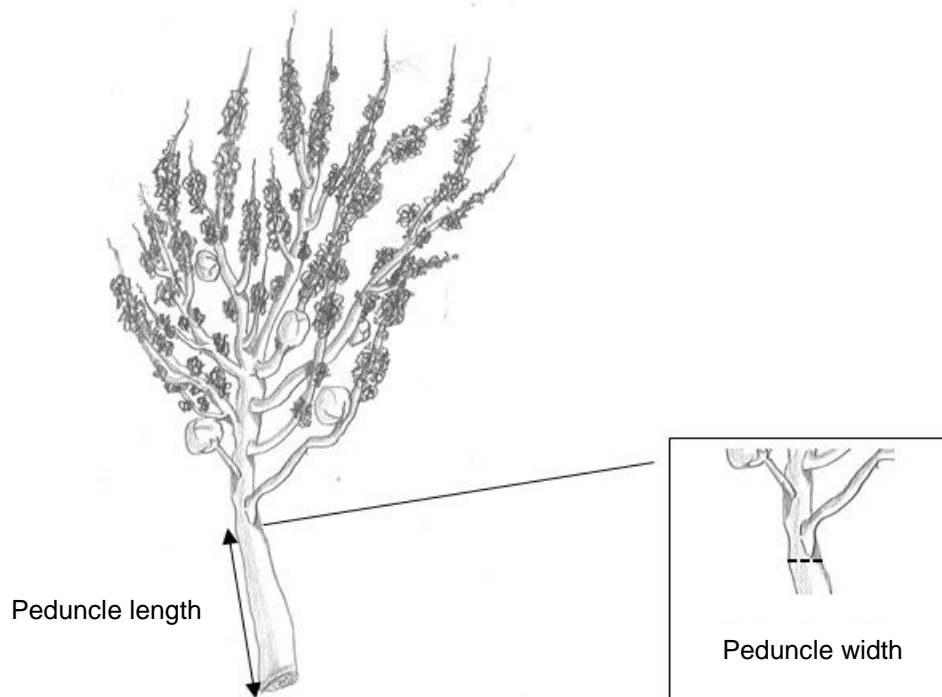


Ad. 21: Inflorescence: length of central axis

The length of the central axis should be measured from the point of insertion of the first spikelet to the point of insertion of the last spikelet.



Ad. 22: Peduncle: length
Ad. 23: Peduncle: width



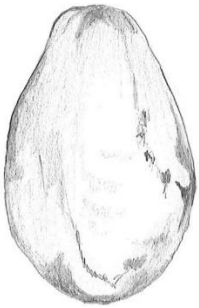
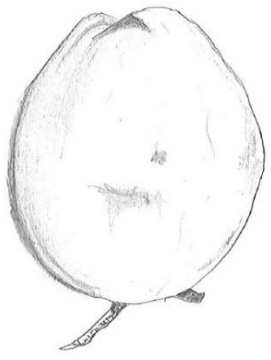
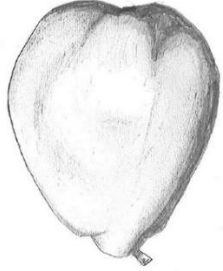
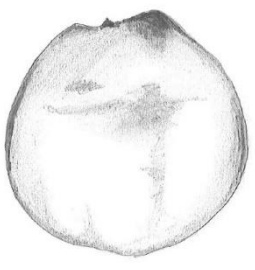
Ad. 25: Fruit: main color

The main color is the color with the largest surface area. In cases where the areas of the main and secondary color are too similar to reliably decide which color has the largest area, the darkest color is considered to be the main color.



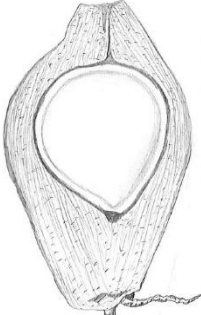

Ad. 26: Fruit: aroma of coconut water

The aroma is assessed by smelling the water at the maturity stage for consumption as water.

Ad. 27: Fruit: shape

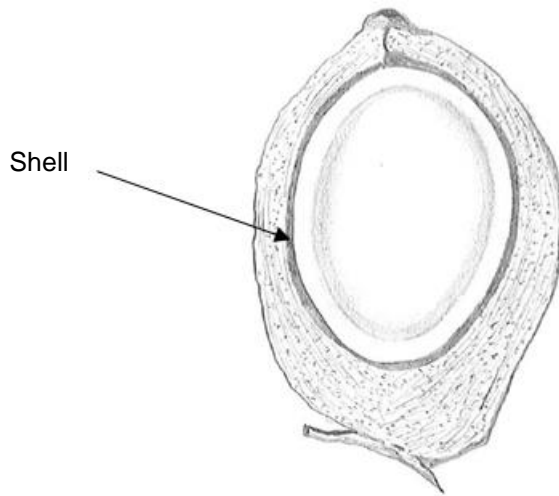
		← broadest part →		
		below middle	at middle	above middle
width (ratio length/width)	narrow (high) ↑	 1 ovate		
			 3 elliptic	 4 obovate
	↓ broad (low)		 2 circular	

Ad. 28: Nut: shape

		← broadest part →	
		at middle	above middle
width (ratio length/width)	narrow (high) →	 3 elliptic	
		 2 circular	 4 obovate
	broad (low) ←	 1 oblate	

Ad. 29: Shell: thickness

The shell thickness should be observed at the middle part of the nut.



Ad. 30: Meat: thickness

The meat thickness should be observed at the middle part of the nut.



9. Literature

Aragão, W. M., Ribeiro, F.E., de V. Melo, M. F. 2009: Cultivares de coqueiro para produção de coco seco: coqueiro gigante vs híbridos. In: Cintra, F.L.D., Fontes, H.R., Passos, E.E.M., Ferreira, J.M.S., (Ed.). Fundamentos tecnológicos para a revitalização das áreas cultivadas com coqueiro gigante do Brasil. Aracaju: Embrapa Tabuleiros Costeiros,. 232p.

IPGRI, 1995: Descriptors for Coconut (*Cocos nucifera* L.). International Plant Genetic Resources Institute. Rome, IT, 61 pp.

Ling GAO, Danzhou DUS testing station for the protection of new variety of plants, Ministry of Agriculture. Institute of Tropical Crops Genetic Resources, Chinese Academy of Tropical Agriculture Sciences. Photograph Ad. 20.

Marcus Vinithius Mendes Prates. Fiscal Federal Agropecuário. Ministério da Agricultura, Pecuária e Abastecimento – MAPA, Brasília – Brasil - Illustrations Ads. 4, 5, 9, 11, 13, 18, 19, 26, 28, 29.

Ministério da Agricultura, Pecuária e Abastecimento – MAPA, Brasília – Brasil, Embrapa Tabuleiros Costeiros – Aracaju – Brasil, photographs 8.1 (a) and ads: 2,10, 16, 21, 22, 23, 30.

Santos, G. A.; Batugal, P. A.; Othaman, A.; Baudouin, L.; Labouisse, J.P. (Ed.) Manual on standardized research techniques in coconut breeding. Rome, IT, IPGRI, 1993, p.irr

Wuidart, W., Rognon, F., 1978: L'analysis de composant de la noix de cocotier: Méthode de détermination du coprah. *Oléagineux*, 33(5): 225-33.

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Application date: (not to be filled in by the applicant)
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TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire

1.1 Botanical name

1.2 Common name

2. Applicant

Name

Address

Telephone No.

Fax No.

E-mail address

Breeder (if different from applicant)

3. Proposed denomination and breeder's reference

Proposed denomination
(if available)

Breeder's reference

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

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

(.....) x (.....)
female parent male parent

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

(.....) x (.....)
female parent male parent

(c) unknown cross []

4.1.2 Mutation []
(please state parent variety)

.....

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

.....

4.1.4 Other []
(please provide details)

.....

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

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

- (a) Self-pollination []
- (b) Cross-pollination []
- (c) Other []
(please provide details)

[]

4.2.2 Other []
(please provide details)

[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

Characteristics	Example Varieties	Note
5.1 Time of appearance of first inflorescence (3)		
very early		1[]
very early to early		2[]
early	Brazilian Green Dwarf Jiqui, Genjah Tebing Tinggi, Malayan Red Dwarf, Malayan Yellow Dwarf	3[]
early to medium		4[]
medium	Dalam Mapanget, MATAG Hybrid Green	5[]
medium to late		6[]
late	Brazilian Tall Praia do Forte, Dalam Jebara, Malayan Tall, Tagnanan Tall	7[]
late to very late		8[]
very late		9[]
5.2 Stem: height (6)		
very short		1[]
very short to short		2[]
short	Acapulco, Brazilian Green Dwarf Jiqui, Malayan Red Dwarf, Malayan Yellow Dwarf	3[]
short to medium		4[]
medium	Híbrido Cancún, Rennel Tall Green	5[]
medium to tall		6[]
tall	Brazilian Tall Praia do Forte, Escondido, Tagnanan Tall	7[]
tall to very tall		8[]
very tall		9[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
5.3 Stem: width (7)		
very narrow		1[]
very narrow to narrow		2[]
narrow	Brazilian Green Dwarf Jiqui, Malayan Red Dwarf, Malayan Yellow Dwarf	3[]
narrow to medium		4[]
medium	Rennel Tall Green	5[]
medium to broad		6[]
broad	Brazilian Tall Praia do Forte, Malayan Tall, Tagnanan Tall	7[]
broad to very broad		8[]
very broad		9[]
5.4 Fruit: main color (25)		
yellow	Acapulco, Genjah Kuning Bali	1[]
green	Brazilian Green Dwarf Jiqui, Genjah Hijau Nias	2[]
red	Genjah Merah	3[]
brown	Genjah Raja Brown	4[]
5.5 Fruit: shape (27)		
ovate	Brazilian Green Dwarf Jiqui, West African Tall Green	1[]
circular	Costa Chica, Tagnanan Tall Green	2[]
elliptic	Acapulco, Malayan Red Dwarf, Malayan Yellow Dwarf	3[]
obovate	Brazilian Tall Praia do Forte	4[]
5.6 Nut: shape (28)		
oblate	Brazilian Green Dwarf Jiqui, Capi	1[]
circular	Acapulco, Malayan Red Dwarf, Malayan Yellow Dwarf	2[]
elliptic	Brazilian Tall Praia do Forte, Donaji, West African Tall Green	3[]
obovate		4[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
<i>Example</i>	<i>Fruit: main color</i>	<i>green</i>	<i>yellow</i>

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#7. Additional information which may help in the examination of the variety

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

Yes [] No []

(If yes, please provide details)

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

Yes [] No []

(If yes, please provide details)

7.3 Other information

8. Authorization for release

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

Yes [] No []

(b) Has such authorization been obtained?

Yes [] No []

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

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

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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9. Information on plant material to be examined or submitted for examination

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

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

- | | | |
|---|---------|--------|
| (a) Microorganisms (e.g. virus, bacteria, phytoplasma) | Yes [] | No [] |
| (b) Chemical treatment (e.g. growth retardant, pesticide) | Yes [] | No [] |
| (c) Tissue culture | Yes [] | No [] |
| (d) Other factors | Yes [] | No [] |

Please provide details for where you have indicated "yes".

.....

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant's name	<input type="text"/>		
Signature	<input type="text"/>	Date	<input type="text"/>

[End of document]