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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

COCONUT

UPOV Code: COCOS_NUC

Cocos nucifera L.

[*]

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from Brazil

to be considered by the

Technical Working Party for Fruit Crops
at its forty-fifth session, to be held in Marrakesh, Morocco, from May 26 to 30, 2014

Disclaimer: this document does not represent UPOV policies or guidance

Alternative Names:[*]

Botanical name	*English*	*French*	*German*	*Spanish*
Cocos nucifera 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., including tall type, dwarf type and hybrid tall x dwarf, under controlled pollination.

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 seeds (fruits).

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

20 seeds.

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

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

3. Method of Examination

3.1 Number of Growing Cycles

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

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

> The growing cycle is considered to be the period ranging from the beginning of flowering of an individual flower or inflorescence, through fruit development and concluding with the harvesting of fruit from the corresponding individual flower or inflorescence. (on TC, april 2014)

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 palm produce a satisfactory crop of fruit in each of the two growing cycles.

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 12 palms.

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 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.

Further guidance is provided in documents TGP/9 “Examining Distinctness” and TGP/8 “Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability”.

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. For the assessment of uniformity of controlled pollinated varieties, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 12 plants, 1 off-type is allowed.

4.3 Stability

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

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

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

(a) Time of appearance of first inflorescence (characteristic 4)
(b) Stem: height (characteristic 8)
(c) Stem: width (characteristic 9)
(d) Fruit: color (characteristic 26)
(e) Fruit: shape (characteristic 27)
(f) Fruit: weight (characteristic 28)
(g) Nut: shape (characteristic 31)

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

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 States of Expression and Corresponding Notes

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

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

State	Note
small	3
medium	5
large	7

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

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

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

(*)	Asterisked characteristic	– see Chapter 6.1.2
QL	Qualitative characteristic	– see Chapter 6.3
QN	Quantitative characteristic	– see Chapter 6.3
PQ	Pseudo-qualitative characteristic	– see Chapter 6.3
MG, MS, VG, VS		– see Chapter 4.1.5
(a)-(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**	**Young plant: color of shoot:**			**(Indonesian TG for coconut without this character)**	**China proposal: only keep one of them** **BR kepp both**	
PQ		yellow				Genjah Kuning Nias	1
		green				Genjah Salak	2
		red				Dalam Mapanget	3
		brown				BRS 03, Genjah Raja Brown, PB 11	4
2. **(+)**	**VG/ MS**	**Young plant: number of leaves**					
QN		few				Genjah Kuning Nias	3
		medium				Genjah Raja Brown	5
		many				Dalam Mapanget	7
3. **(*)** **(+)**	**VG**	**Young plant: Leaf: time of splitting**					
QN		early				Dalam Sawarna	1
		medium				Dalam Tenga, Genjah Kuning Bali	2
		late					3
4. **(*)** **(+)**	**MG**	**Time of appearance of first inflorescence**					
QN		early				Genjah Tebing Tinggi	3
		medium				Dalam Mapanget, Gigante do Brasil da Praia do Forte	5
		late				Dalam Jepara	7
5. **(*)** **(+)**	**VG**	**Leaves attitude of lower leaves**					
QN	**(a)**	upwards					1
		outwards					2
		downwards					3
6. **(*)** **(+)**	**VG**	**Stem: bole**					
QL	**(a)**	absent				Genjah Kuning Nias	1
		present					9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
7. (*) (+)	**VG/ MS**	**Only varieties with bole: Stem: circumference of the bole**					
QN	**(a)**	small				Kelapa Hibrida Indonesia-1	1
		medium				Dalam Mapanget	3
		large				Dalam Tenga	5
8. (*) (+)	**VG/ MS**	**Stem: height**					
QN	**(a)**	short					3
		medium					5
		long					7
9. (*) (+)	**VG/ MS**	**Stem: width**			**China proposal: 1/3/5 or 1,2,3,4 – very small, small, medium,large**	**Brasil: 3, 5, 7**	
QN	**(a)**	small					3
		medium					5
		large					7
10. (+)	**VG/ MS**	**Petiole: length**					
QN	**(a)**	short				Genjah Kuning Nias	3
		medium				Kelapa Hibrida Indonesia-1	5
		long				Dalam Tenga	7
11. (+)	**VG/ MS**	**Petiole: thickness**			**(keep 3,5,7) IN and BR**	**China proposal: 1,2,3 thin, medium, thick or 1, 3,5, thin, medium, thick**	
QN	**(a)**	thin				Genjah Kuning Nias	3
		medium				Kelapa Hibrida Indonesia-2	5
		thick				Dalam Bali	7
12. (+)	**VG/ MS**	**Petiole: width**			**China proposal: 1,2,3 narrow, medium, large or 1, 3,5, narrow, medium, large**	**Brasil: 3, 5, 7**	
QN	**(a)**	narrow				Dalam Mapanget	3
		medium				Genjah Raja Brown	5
		broad				Dalam Kima Atas	7
13.	**VG**	**Petiole: color**					
PQ	**(a)**	yellow				Genjah Kuning Nias	1
		green				Anão Verde do Brasil de Jiqui, Genjah Salak	2
		red				Dalam Mapanget	3
		brown				Genjah Raja Brown	4

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14. (*) (+)	**VG/ MS**	**Leaf: length of rachis**					
QN	**(a)**	short				Genjah Kuning Nias	3
		medium				Kelapa Hibrida Indonesia-3	5
		long				Dalam Palu	7
15.	**VG/ MS**	**Leaf: number of leaflets**					
QN	**(a)**	few				Genjah Kuning Nias	3
		medium				Dalam Jepara	5
		many				Dalam Takome	7
16. (+)	**VG/ MS**	**Leaf: leaflet length**			**(keep 3,5,7) IN and BR**	**China proposal: 1/3/5 or 1,2,3,– short, medium, long**	
QN	**(a)**	short				Genjah Kuning Nias	3
		medium				Dalam Tebing Tinggi	5
		long				Dalam Kima Atas	7
17. (+)	**VG/ MS**	**Leaf: leaflet width**			**(keep 3,5,7) IN and BR**	**China proposal: 1/3/5 or 1,2,3,– narrow, medium, broad**	
QN	**(a)**	narrow				Genjah Kuning Bali	3
		medium				Dalam Mamuaya	5
		broad				Dalam Kima Atas	7
18.	**VG**	**Leafleaflet: intensity of green color**					
QN	**(a)**	light					1
		medium					2
		dark					3
19. (+)	**VG/ MS**	**Inflorescence: peduncle length**					
QN	**(b)**	short				Genjah Raja Brown	3
		medium				Kelapa Hibrida Indonesia-4	5
		long				Dalam Mapanget	7
20. (+)	**VG/ MS**	**Inflorescence: peduncle width**					
QN	**(b)**	small				Genjah Raja Brown	3
		medium				Kelapa Hibrida Indonesia-4	5
		large				Dalam Mapanget	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21. **(+)**	**VG/ MS**	**Inflorescence: central axis length**					
QN	**(b)**	short				Genjah Raja Brown	3
		medium				Kelapa Hibrida Indonesia-4	5
		long				Dalam Mapanget	7
21.a **(+)**	**VG/ MS**	**Inflorescence: attitude of spikelets**	New charac from China. See photo		Already expressed in Char 22, and relatively depend on flowering stage) IN and BR	New charac from China. See photo	
		compact				Small king coconut	1
		medium					2
		loose				Wenye78F1	3
22. **(+)**	**VG/ MS**	**Inflorescence: number of spikelets**					
QN	**(b)**	few				Dalam Tenga	3
		medium				Dalam Banyuwangi	5
		many				Dalam Kima Atas	7
23. **(*)** **(+)**	**VG/ MS**	**Inflorescence: number of spikelets with female flowers**			**some spikelets don't have female flowers**		
QN	**(b)**	few					3
		medium					5
		many					7
24. **(+)**	**VG/ MS**	**Inflorescence: length of first spikelet with female flower**					
QN	**(b)**	short				Genjah Raja Brown	3
		medium				Kelapa Hibrida Indonesia-4	5
		long				Dalam Mapanget	7
25. **(+)**	**VG/ MS**	**Bunch: number of fruits**					
QN	**(c)**	few				Dalam Sawarna	3
		medium				Dalam Mapanget	5
		many				Dalam Takome	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26. (+)	**VG/ MS**	**Peduncle lenght**	**BR: to deleted, related char. 19**				
26. (*) (+)	**VG**	**Fruit: color**	**old 27**				
PQ	**(c)**	yellow				Genjah Kuning Bali	1
		green				Genjah Hijau Nias	4
		red				Genjah Merah	7
		brown				Genjah Raja Brown	10
27. (*) (+)	**VG/ MS**	**Fruit: shape**	**old 29**				
PQ	**(c)**	ovate					1
		circular					2
		elliptic					3
		obovate					4
28. (*)	**MS**	**Fruit: weight**	**old 28**				
QN	**(d)**	low				Genjah Orange Srengat	3
		medium				Genjah Tebing Tinggi	5
		high				Dalam Bali	7
29. (+)	**VG/ MS**	**Fruit:ratio weight of fruit/weight of husk**	**old 30**				
QN	**(d)**	low					1
		medium					3
		high					5
30. (+)	**VG**	**Fruit: aroma of coconut water**	**NEW**	**It is China proposal Needs example varieties of China**	**it very subjective for Brasil. Also for Indonesia, due to high influence of environment**		
QL	**(c)**	absent					1
		present				Wenye4	9
31 (*) (+)	**VG**	**Nut: shape**					
PQ	**(d)**	ovate					1
		oblate					2
		circular					3
		elliptic					4

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
32.	**VG/ MS**	**Nut: weight**					
QN	**(d)**	low				Genjah Orange Srengat	3
		medium				Genjah Raja Brown	5
		high				Dalam Palu	7
33. (+)	**VG/ MS**	**Shell: thickness**					
QN	**(d)**	thin				Genjah Kuning Nias	1
		medium				Kelapa Hibrida Indonesia-1	2
		thick				Dalam Tenga	3
34. (*) (+)	**MS**	**Meat: weight**					
QN	**(d)**	low				Genjah Orange Srengat	3
		medium				Dalam Tenga	5
		high				Dalam Bali	7
35. (*)	**VG/ MS**	**Meat: thickness**					
QN	**(d)**	thin				Genjah Kuning Jombang	1
		medium				Dalam Sawarna	2
		thick				Dalam Mapanget	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) Palm, stem, petiole and petiole and leaf: Observations should be made at the time when the eleventh leaf scars appears (see photo Ad. 5 to 9: leaf scars). Observations on leaf and petiole should be made at 14ª leaf on maturity leaf.

(b) Inflorescence: Observations on inflorescence should be taken after the appearance of the fifth inflorescence, when female flowers are receptive.

(c) Bunch, peduncle and fruit color: Observations on the bunch, peduncle and fruit color should be made at the time of consumption as coconut water (at 6-7 months age fruit), after the appearance of the sixth bunch (we need to take off the fifth inflorescence to evaluate).

(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.

(a) Leaf scars (Ad. 5 to 9)

8.2 Explanations for individual characteristics

Ad. 1: Young plant: color of shoot

Should be observed as soon as shoot emergence.

Ad. 2: Young plant: number of leaves

Should be observed at age 6 months after the germination of the seed.

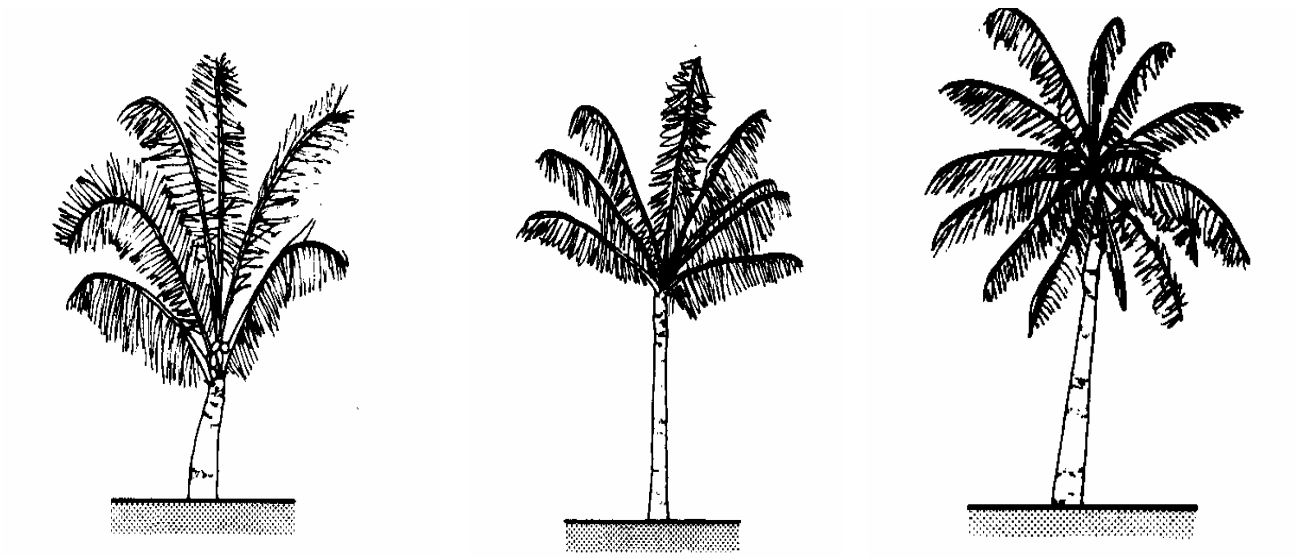
Ad. 3: Young plant: Leaf: time of splitting

The leaf begins splitting into leaflets when the plant are around 6 months old.

Ad. 4: Time of appearance of first inflorescence

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

Ad. 5: Leaves: attitude of lower leaves

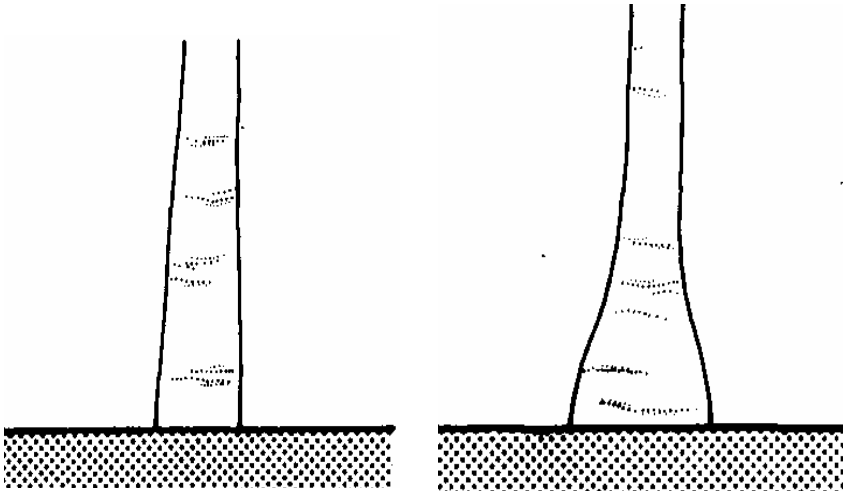


1
upwards

2
outwards

3
downwards

Ad. 6: Stem: bole



1
absent

9
present

Ad. 7 Only varieties with bole:Stem: circumference of the bole

The circumference of the bole should be measured at its widest part.

Ad. 8: Stem: height

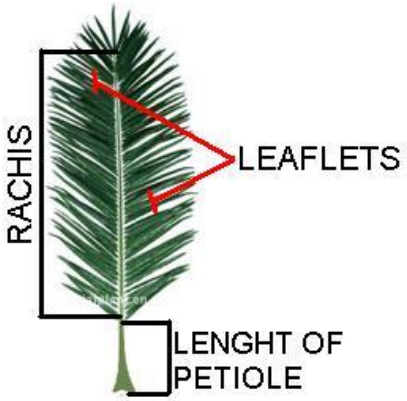
The steam hight should be measured from the ground to the top of the 11th scar (see photo Ad. 5 to 9: leaf scars).

Ad. 9: Stem: width

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

Ad. 10: Petiole: length

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



Ad. 11: Petiole: thickness
Ad. 12: Petiole: width

The petiole thickness and the petiole width should be measured at the insertion of the first leaflet.

Ad. 14: Leaf: length of rachis

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

Ad. 16: Leaf: leaflet length
Ad. 17: Leaf: leaflet width

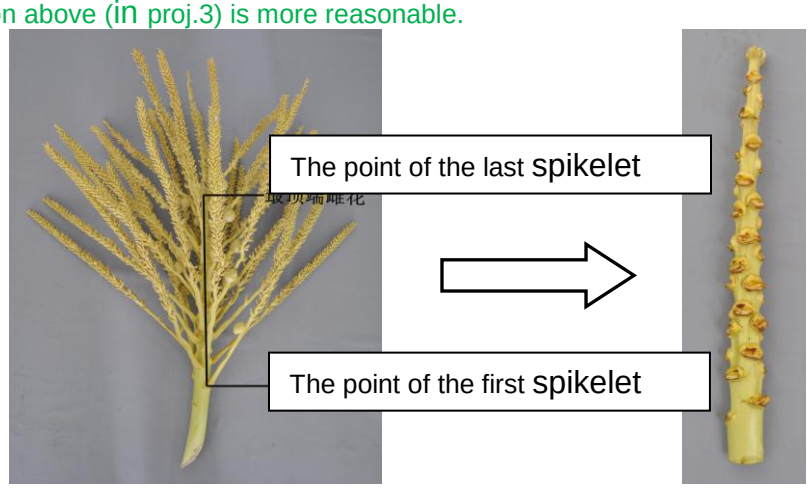
The leaflet length and the leaflet width should be measured at the middle of the rachis

Ad. 19: Inflorescence: peduncle length
Ad. 20: Inflorescence: peduncle width
Ad. 21: Inflorescence: central axis length

Chinese work:

Normally, the length of central axis is measured from the point of the first spikelet to the point of the last spikelet (not include the top spikelet) in our work for convenience.

Maybe the illustration above (in proj.3) is more reasonable.



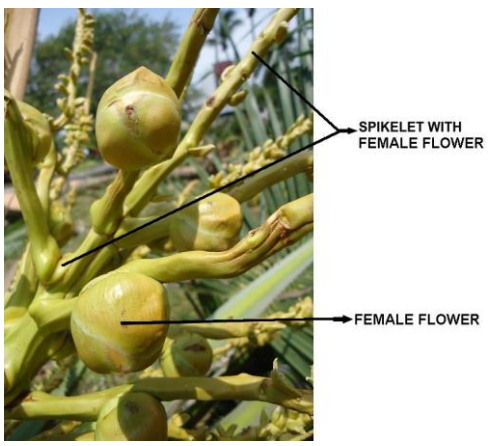
Ad. 21.a: Inflorescence: attitude of spikelets

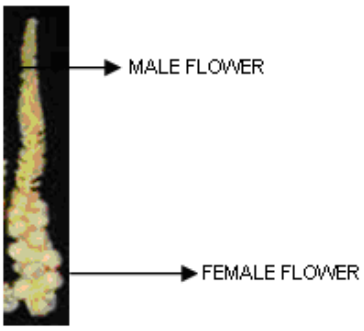
compact	loose
1	2

Ad. 22: Inflorescence: number of spikelets

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

Ad. 23: Inflorescence: number of spikelets with female flowers

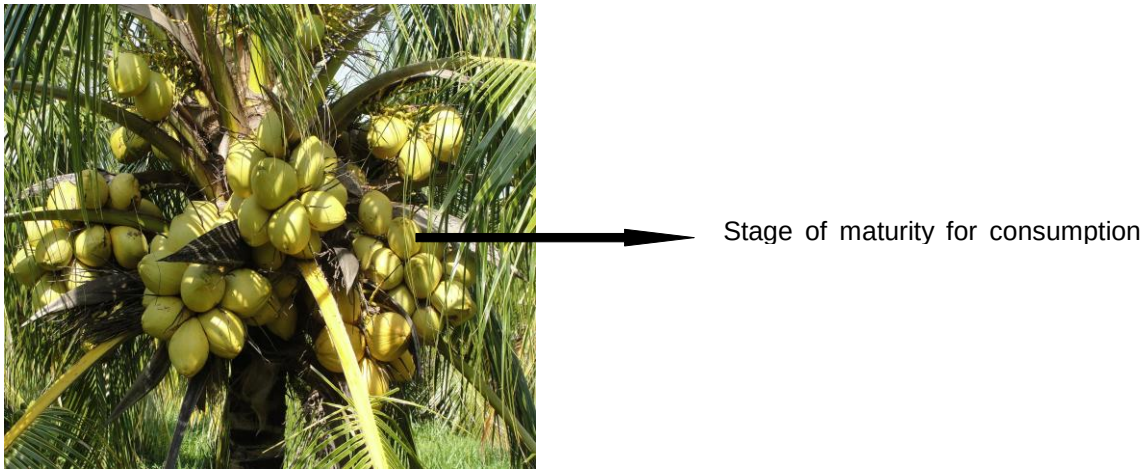




Ad. 24: Inflorescence: length of first spikelet with female flower

Should be evaluated after the appearance of the fifth inflorescence, on the first spikelet with female flowers counting from the base of the inflorescence.

Ad. 26: Fruit: color (old 27)



Ad. 27: Fruit: shape (old 29)

< lateral outline >		< broadest part >		
		(below middle)	at middle	(above middle)
	rounded	 1 ovate	 3 elliptic  2 circular	 4 obovate
	rounded with neck			

Ad. 29: Fruit: the ratio weight of fruit/weight of husk (old 30)
Ad. 31: Nut: shape
Ad. 33: Shell: thickness
Ad. 34: Meat: weight

1.	exocarp	**husk** = exocarp + mesocarp
2.	mesocarp	
3.	endocarp (shell)	**nut** = endocarp + endosperm
4.	endosperm (meat)	
5.	embryo	

Ad. 31: Nut: shape

		←	**Broadest part**	→
		below middle	**middle**	**above middle**
↑ **ratio width/length** ↓	**elongated**	 1 ovate	 4 elliptic	
	medium		 3 circular	
	compressed		 2 oblate	

9. Literature

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

The Minimum List of Descriptors for coconut – from CIRAD with same other counties contributions(China, Brasil, France, Mexico, Indonesia, Malaysia, Philippines, Viet Nam), ano....

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Ribeiro, F.E., de Siqueira, E.R., Aragão, W.M., Tupinambá, E.A., 2000: Ecótipos de coqueiro gigante no Brasil. Aracaju: Embrapa Tabuleiros Costeiros,. 25p. (Embrapa-Tabuleiros Costeiros. Documentos, 17).

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de Siqueira, E.R., Ribeiro, F.E., Aragão, W.M., Tupinambá, E.A., 1998: Melhoramento genético do coqueiro. In: Ferreira, J.M.S.; Warwick, D.R.N.; Siqueira, L.A. (Ed.). A cultura do coqueiro no Brasil. 2. Ed. rev. Amp. Brasília: Embrapa-SPI,. 292p.

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

9. Technical Questionnaire

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

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

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

1. Subject of the Technical Questionnaire

1.1 Botanical name	*Cocos nucifera* L.
1.2 Common name	Coconut

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)

(……..……..…) 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:

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

(a) Self-pollination [ ]
(b) Cross-pollination
(i) population [ ]
(ii) synthetic variety [ ]
(c) Hybrid [ ]
(d) Other [ ]
(please provide details)

4.2.2 Vegetative propagation

(a) cuttings [ ]

(b) *in vitro* propagation [ ]

(c) other (state method) [ ]

4.2.3 Other [ ]
(please provide details)

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 (4)	**Time of appearance of first inflorescence**		
	very early		1[ ]
	Very early to early		2[ ]
	early	Genjah Tebing Tinggi	3[ ]
	early to medium		4[ ]
	medium	Dalam Mapanget, Gigante do Brasil da Praia do Forte	5[ ]
	medium to late		6[ ]
	late	Dalam Jepara	7[ ]
	late to very late		8[ ]
	very late		9[ ]
5.2 (9)	**Stem: width**		
	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[ ]
5.3 (26)	**Fruit: color**		
	yellow	Genjah Kuning Bali	1[ ]
	green	Genjah Hijau Nias	4[ ]
	red	Genjah Merah	7[ ]
	brown	Genjah Raja Brown	10[ ]

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

	Characteristics	Example Varieties	Note
5.4 (27)	**Fruit: shape**		
	ovate		1[ ]
	circular		2[ ]
	elliptic		3[ ]
	obovate		4[ ]
5.5 (28)	**Fruit: weight**		
	very low		1[ ]
	very low to low		2[ ]
	low	Genjah Orange Srengat	3[ ]
	low to medium		4[ ]
	medium	Genjah Tebing Tinggi	5[ ]
	medium to high		6[ ]
	high	Dalam Bali	7[ ]
	high to very high		8[ ]
	very high		9[ ]
5.6 (31)	**Nut: shape**		
	ovate		1[ ]
	oblate		2[ ]
	circular		3[ ]
	elliptic		4[ ]

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

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	*Fruit: color*	*green*	*yellow*

Comments:

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

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

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

Yes [ ] No [ ]

(If yes, please provide details)

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

Main use of the variety:

(a) pot plant [ ]

(b) garden plant [ ]

(c) other [ ]

A representative color image of the variety should accompany the Technical Questionnaire.

8. Authorization for release

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

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

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

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

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

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

(a) Microorganisms (e.g. virus, bacteria, phytoplasma) Yes [ ] No [ ]

(b) Chemical treatment (e.g. growth retardant, pesticide) Yes [ ] No [ ]

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

Please provide details for where you have indicated “yes”.

……

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

Applicant’s name

Signature Date

[End of document]