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TG/264/2(proj.8)
ORIGINAL: English
DATE: 2016-09-28

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

PAPAYA

UPOV Code(s): CARIC_PAP

Carica papaya L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from Mexico
to be considered by the
Technical Working Party for Fruit Crops
at its forty-seventh session, to be held in Angers, France,
from 2016-11-14 to 2016-11-18

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Carica papaya L.	Papaya, Papaw	Papayer	Melonenbaum, Papaya	Papaya, Lechosa, Fruta bomba

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.

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Carica papaya* 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 seeds or plants.

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

200 seeds in the case of seed-propagated varieties,
or 5 plants in the case of vegetatively propagated varieties.

In the case of seed, the seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority.

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

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

3. Method of Examination

3.1 Number of Growing Cycles

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

3.1.2 The two independent growing cycles should be in the form of two separate plantings.

3.1.3 In particular, it is essential that the trees produce a satisfactory crop of fruit in each of the two 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

3.4.1 Each test should be designed to result in a total of at least 5 trees.

3.4.2 Each test should be designed to result in a total of at least 50 plants, with at least 15 hermaphrodite plants and at least 15 female plants if exist, in the case of seed-propagated varieties

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 or parts of plants to be Examined

In the case of seed-propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 15 plants or parts taken from each of 15 plants and any other observation 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 5.

In the case of vegetatively propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 5 plants or parts taken from each of 5 plants and any other observation 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 5.

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 for cross-pollinated varieties should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.2.3 The assessment of uniformity for hybrid varieties depends on the type of hybrid and should be according to the recommendations for hybrid varieties in the General Introduction.

4.2.4 For the assessment of uniformity of vegetatively propagated 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 5 plants, no off-types are allowed.

4.2.5 For the assessment of uniformity of seed-propagated 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 15 plants, one 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) Plant: height of attachment of first inflorescence (characteristic 2)
(b) Leaf blade: ratio length/width (characteristic 9)
(c) Petiole: length (characteristic 13)
(d) Fruit: ratio length/ width in hermaphrodite plants (characteristic 24)
(e) Fruit: color of flesh (characteristic 36)

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1 2	**3 4**	**5 6**	**7**			
	Name of characteristics in English	**Nom du caractère en français**	**Name des Merkmals auf Deutsch**	**Nombre del carácter en español**		
	states of expression	types d'expression	Ausprägungsstufen	tipos de expresión		

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression
QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)
MG, MS, VG, VS – see Chapter 4.1.5

5 (+) See Explanations on the Table of Characteristics in Chapter 8.2

6 (a)-(d) See Explanations on the Table of Characteristics in Chapter 8.1

7 Not applicable

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.		**PQ VG**					
		Young plant: color of stem					
		green				Ishigaki Sango	1
		yellowish green				Tainung Nº 1	2
		brown				Tangkai hitam	3
		green and purple				Sunrise	4
		purple					5
2.	**(*)**	**QN MS/VG**	**(+) (a)**				
		Plant: height of attachment of first inflorescence					
		low				Ishigaki Sango, Sekaki	3
		medium				Sunrise, Tainung Nº 1	5
		high				Cera, Dampit, Semangko	7
3.	**(*)**	**QL VG**					
		Plant: branching					
		absent				Ishigaki Sango, Maradol, Sunrise	1
		present					9
4.		**QN MS/VG**	**(a)**				
		Stem: diameter					
		small					3
		medium				Ishigaki Sango, Sunrise, Tainung Nº 1	5
		large				Eksotika, Klangdong	7
5.	**(*)**	**QN MS/VG**	**(+) (a)**				
		Stem: number of nodes					
		few				Ishigaki Sango	3
		medium				Sunrise, Tainung Nº 1	5
		many				Semangko	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6.	**(*)**	**QN MS/VG**	**(a)**				
		Stem: length of internode					
		short				Ishigaki Sango	3
		medium				Sekaki, Sunrise, Tainung Nº 1	5
		long				Eksotika, Semangko	7
7.		**QN MS/VG**	**(+) (b)**				
		Leaf blade: length					
		short				BT-K, Eksotika	3
		medium				Ishigaki Sango, Sunrise, Tainung Nº 1	5
		long				Dampit	7
8.		**QN MS/VG**	**(b)**				
		Leaf blade: width					
		narrow				BT-K, Eksotika	3
		medium				Sunrise, Tainung Nº 1	5
		broad				Dampit	7
9.	**(*)**	**QN MS/VG**	**(b)**				
		Leaf blade: ratio length/width					
		low to medium				Johor	1
		medium				Ishigaki Sango, Sunrise, Tainung Nº 1	2
		medium to high				Golden	3
10.	**(*)**	**QL VG**	**(+) (b)**				
		Leaf blade: presence of tertiary lobes					
		absent					1
		present				Ishigaki Sango, Sunrise, Tainung Nº 1	9
11.	**(*)**	**QL VG**	**(+) (b)**				
		Leaf: presence of secondary leaf					
		absent				Cera, Maradol, Sunrise	1
		present				Callina, Plugmailai, Sekaki	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12.	**(*)**	**QL VG**	**(b)**				
		Leaf blade: pubescence on lower side					
		absent				Ishigaki Sango, Sunrise, Tainung Nº 1	1
		present					9
13.	**(*)**	**QN MS/VG**	**(+) (b)**				
		Petiole: length					
		short				BT-K	3
		medium				Ishigaki Sango, Sunrise, Tainung Nº 1	5
		long				Dampit	7
14.		**QN VG**	**(b)**				
		Petiole: anthocyanin coloration					
		absent or very weak				Ishigaki Sango	1
		medium				Sunrise, Tainung Nº 1	3
		very strong					5
15.	**(*)**	**QN MG**	**(+)**				
		Time of beginning of flowering					
		early				Arum, Carisya, Sinta	3
		medium				Callina, Sunrise	5
		late				Cavite Special, Wulung	7
16.		**QN VG**	**(c)**				
		Inflorescence: number of flowers on hermaphrodite plants					
		few				Ishigaki Sango	3
		medium				Eksotika, Sunrise	5
		many				Tainung Nº 1	7

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17.		**QN**	**MS/VG**		**(c)**				
		Inflorescence: length of main axis on hermaphrodite plants							
		short						Ishigaki Sango, Sunrise	3
		medium						BT-1	5
		long						Dampit	7
18.		**QN**	**VG**		**(c)**				
		Inflorescence: anthocyanin coloration of axis on hermaphrodite plants							
		absent or weak						Ishigaki Sango, Sunrise, Tainung Nº 1	1
		medium							2
		strong						Tangkai hitam	3
19.		**QN**	**MS/VG**	**(+)**	**(c)**				
		Flower: length of corolla							
		short						BT-3	3
		medium						BT-1	5
		long						Dampit	7
20.		**PQ**	**VG**	**(+)**	**(c)**				
		Flower: color of corolla							
		white						Morib	1
		cream						Eksotika, Sunrise	2
		yellow							3
		green							4
		purple						Sabah Yellow	5
21.	**(*)**	**QN**	**MS/VG**		**(d)**				
		Peduncle: length in hermaphrodite plants							
		short						Eksotika, Ishigaki Sango, Sunrise	3
		medium						Sekaki	5
		long						Dampit, Semangko	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
22.	**(*)**	**QN MS/VG**	**(d)**				
		Fruit: length in hermaphrodite plants					
		short				Du Roi Solo, Sunrise	3
		medium				Eksotika, Ishigaki Sango	5
		long				Cera, Tainung Nº 5	7
23.	**(*)**	**QN MS/VG**	**(d)**				
		Fruit: width in hermaphrodite plants					
		small				Du Roi Solo, Sunrise	3
		medium				Ishigaki Sango	5
		large				Cera	7
24.	**(*)**	**QN MS/VG**	**(+) (d)**				
		Fruit: ratio length/ width in hermaphrodite plants					
		low				Eksotika, Sunrise	3
		medium				Ishigaki Sango, Sekaki	5
		high				Cera, Dampit	7
25.		**QN MS/VG**	**(d)**				
		Fruit: length in female plants					
		short				Intenzza	3
		medium				Zapote Morada	5
		long					7
26.		**QN MS/VG**	**(d)**				
		Fruit: width in female plants					
		small				Pococi	3
		medium				Intenzza	5
		large				Coco	7
27.		**QN MS/VG**	**(d)**				
		Fruit: ratio length/width in female plants					
		low				Coco	3
		medium				Holland	5
		high					7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
28.	**(*)**	**PQ VG**	**(+) (d)**				
		Fruit: shape in hermaphrodite plants					
		ovate				Cariflora	1
		elliptic				Eksotika, Ishigaki Sango	2
		obovate				Du Roi Solo, Red Lady	3
		pyriform				Kapoho, Rainbow	4
		oblong				Amarela, Sekaki	5
		obovate waisted				BT-1	6
29.	**(*)**	**PQ VG**	**(d)**				
		Fruit: shape in female plants					
		ovate					1
		elliptic				Zapote Verde	2
		obovate				Zapote Morada	3
		pyriform				Mulata	4
		oblong					5
		obovate waisted					6
30.		**PQ VG**	**(+) (d)**				
		Fruit: shape of stalk end					
		pointed				BT-1	1
		rounded				Semangko	2
		truncate				Sunrise	3
		depressed				Du Roi Solo, Ishigaki Sango	4
31.		**QN VG**	**(d)**				
		Fruit: shape at distal end					
		rounded				Tainung Nº 1	1
		weakly pointed				Ishigaki Sango, Sunrise	2
		strongly pointed				Du Roi Solo	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
32.	**(*)**	**PQ VG**	**(+) (d)**				
		Fruit: main color					
		green				Sari Gading	1
		yellow green				BT-K, Sabah Yellow	2
		yellow				Amarela, Kapoho, Tainung Nº 1	3
		medium orange				Ishigaki Sango, Maradol, Mulata	4
		dark orange				Dampit, Mamey	5
33.		**QN VG**	**(+) (d)**				
		Fruit: ridges					
		absent or very weak				Ishigaki Sango, Tainung Nº 1	1
		weak				BT-4	2
		moderate				Semangko	3
		strong				Dampit	4
34.		**QN VG**	**(d)**				
		Fruit: surface texture					
		smooth				Callina, Paris	3
		medium				Carisya	5
		rough				Sukma	7
35.	**(*)**	**QN VG**	**(+) (d)**				
		Fruit: thickness of skin					
		thin				BT-3	1
		medium				Eksotika, Sunrise	2
		thick				Dampit, Tainung Nº 1	3
36.	**(*)**	**PQ VG**	**(d)**				
		Fruit: color of flesh					
		yellow				Amarela, Cera, Kapoho	1
		orange				Sunrise, Tainung Nº 1	2
		red orange				Ishigaki Sango, Maradol	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
37.	**QN** **VG**	**(d)**				
	Fruit: firmness of flesh					
	soft				Cera	3
	medium				Maradol	5
	firm				Sekaki, Sunrise	7
38.	**QN** **VG**	**(d)**				
	Fruit: sweetness of flesh					
	low				Cera	3
	medium				Maradol, Sekaki, Tainung Nº 1	5
	high				Eksotika, Ishigaki Sango, Sunrise	7
39.	**QN** **VG**	**(d)**				
	Fruit: aroma of flesh					
	weak				Callina, Sekaki	1
	medium				Ishigaki Sango, Sunrise	2
	strong				Eksotika	3
40.	**QN** **MG/VG**	**(d)**				
	Fruit: thickness of flesh					
	thin					3
	medium					5
	thick				Sekaki	7
41.	**QN** **VG**	**(d)**				
	Fruit: abundance of placental tissue					
	scarce				BT-1, Mamey	3
	moderate				Eksotika, Sunrise	5
	abundant				BT-3, Cera	7
42.	**QN** **MS/VG**	**(d)**				
	Fruit: width of central cavity					
	narrow				Sekaki, Sunrise	3
	medium				Golden, Ishigaki Sango, Tainung Nº 1	5
	broad				Dampit, Semangko	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
43.	**(*)**	**PQ VG**	**(+) (d)**				
		Fruit: shape of central cavity					
		circular				Niensee	1
		angular				BT-K, Tainung Nº 1	2
		weakly stellate				Du Roi Solo, Ishigaki Sango, Sunrise	3
		strongly stellate				BT-2	4
		irregular				Semangko	5
44.	**(*)**	**QN MS/VG**	**(d)**				
		Fruit: number of seeds					
		absent or very few				Ishigaki Sango	1
		few				Du Roi Solo	3
		medium					5
		many				Sunrise	7
		very many				Cera, Tainung Nº 1	9
45.		**PQ VG**					
		Seed: color					
		grey yellow				BT-K	1
		grey				Dampit	2
		medium brown				Eksotika	3
		dark brown				BT-1, Sekaki	4
		black				Maradol, Morib	5
46.		**QN MS/VG**					
		Seed: length					
		short				BT-K	3
		medium				BT-1	5
		long				Cera, Dampit	7
47.		**QN MS/VG**					
		Seed: width					
		narrow				BT-2	3
		medium				Sunrise, Tainung Nº 1	5
		broad				Dampit	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
48.	**QN MS/VG**	**(+)**				
	Seed: ratio length/width					
	low				BT-1	1
	medium				Sunrise, Tainung Nº 1	2
	high					3
49.	**QN MS/VG**	**(+)**				
	Seed: position of broadest part					
	at middle				Sunrise	1
	slightly towards base				Tainung Nº 1	2
	clearly towards base					3
50.	**QN MS/VG**	**(+)**				
	Seed: amount of mucilage					
	small				BT-3	1
	moderate				Sunrise, Tainung Nº 1	2
	large				Cera	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) Plant and stem: Observations on the plant and stem should be made when the first inflorescence or single flower has appeared.

(b) Leaf, leaf blade and petiole: Observations on the leaf, leaf blade and petiole should be made on mature leaves. Leaves should be taken from the middle third of the current season's growth when the first inflorescence or single flower has appeared.

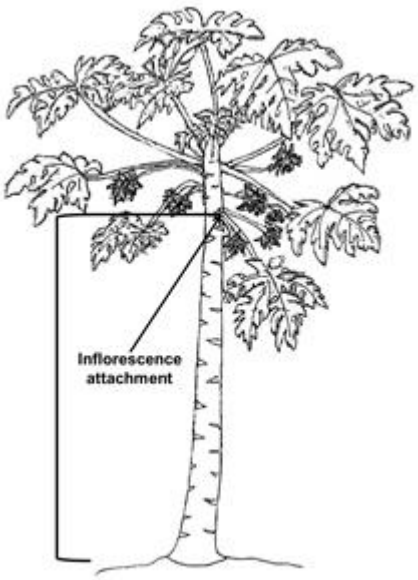
(c) Inflorescence: Observations on inflorescence should be taken after the fourth one has appeared, when it has reached its full length. Single flowers should be excluded from all observations.

(d) Fruit: Observations should be on fruit taken from the middle of the fruiting area. A fruit is considered ripe when the color change is completed. If the type of tree is not indicated the observations must be taken from hermaphrodite trees.

8.2 Explanations for individual characteristics

Ad. 2: Plant: height of attachment of first inflorescence

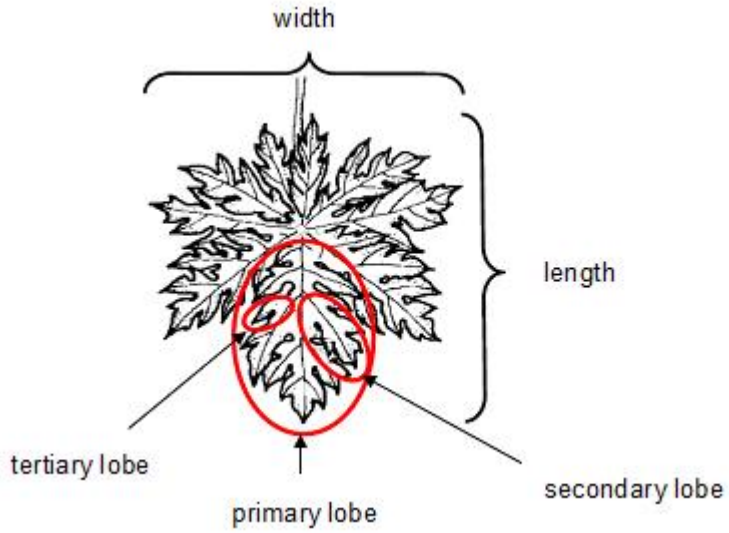
To be considered as the height of attachment of the first inflorescence or single flower.



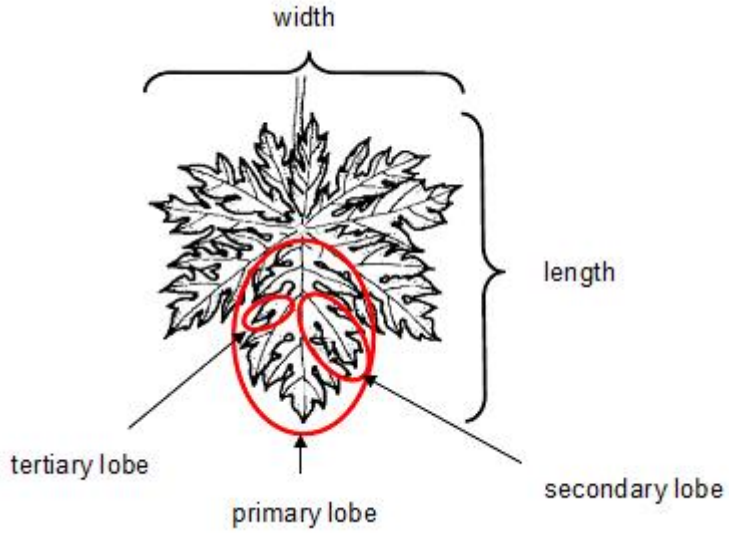
Ad. 5: Stem: number of nodes

The number of nodes should be observed from the ground up to the first flower.

Ad. 7: Leaf blade: length



Ad. 10: Leaf blade: presence of tertiary lobes

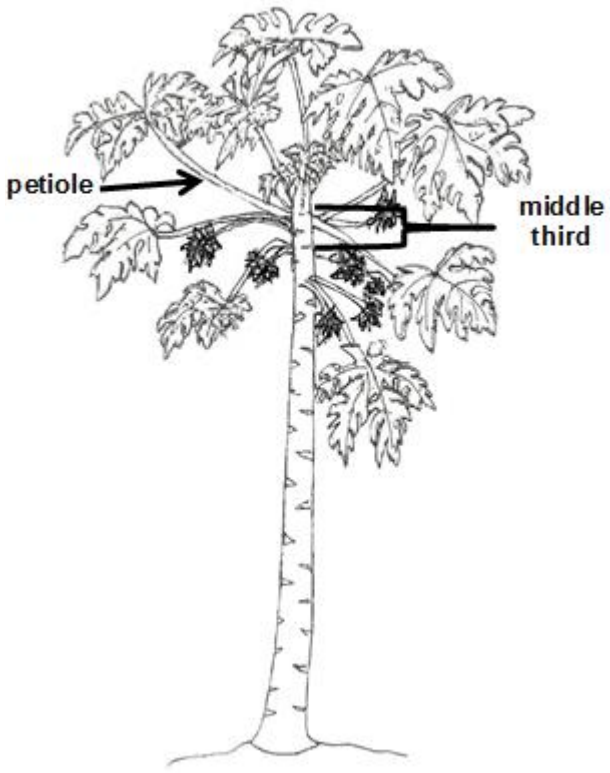


Ad. 11: Leaf: presence of secondary leaf

1
absent

2
present

Ad. 13: Petiole: length



Ad. 15: Time of beginning of flowering

The beginning of flowering is considered when 10% of the flowers on the first inflorescence have started to flower.

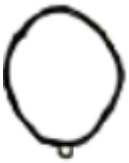
Ad. 19: Flower: length of corolla

This characteristic only applies to hermaphrodite or female varieties. Observations on flower length should be made during the first flower opening, at the start of anther dehiscence in hermaphrodite varieties, and in the case of female varieties at midday.

Ad. 20: Flower: color of corolla

This characteristic applies to all types of plants, regardless of the sex. Observations on flower color should be made during the first flower opening.

Ad. 24: Fruit: ratio length/ width in hermaphrodite plants



3
low

5
medium

7
high

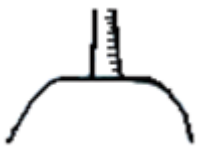
Ad. 28: Fruit: shape in hermaphrodite plants

< lateral outline >	< broadest part > (below middle)	at middle	(above middle)
flat parallel sides		 5 oblong	
rounded	 1 ovate	 2 elliptic	 3 obovate
rounded with neck			 4 pyriform
Rounded with central constriction			 6 obovate waisted

Ad. 30: Fruit: shape of stalk end

1
pointed

2
rounded



3
truncate

4
depressed

Ad. 32: 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. 33: Fruit: ridges

To be observed in transverse section.

1
absent or very week

2
weak

3
moderate

4
strong

Ad. 35: Fruit: thickness of skin

The thickness of the skin is observed in transverse section with the help of a magnifying glass.

Ad. 43: Fruit: shape of central cavity

1
circular

2
angular

3
weakly stellate

4
strongly stellate

5
irregular

Ad. 48: Seed: ratio length/width

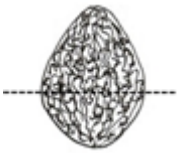
1
low

2
medium

3
high

Ad. 49: Seed: position of broadest part

1
at middle



2
slightly towards base

3
strongly towards base

Ad. 50: Seed: amount of mucilage

The amount of mucilage is determined visually by separating the mucilage from the seed.

9. Literature

IBPGR, 1988: Descriptors for Papaya. International Board for Plant Genetic Resources. Rome, IT, 34 pp.

Loyola, J.L.D., Pinto, R.M. de S., Lima, J.F. de, Ferreira, F.R. 2000: Catálogo de germoplasma de mamão (*Carica papaya* L.). Embrapa Mandioca e Fruticultura, Cruz das Almas, Bahia, BR, 40 pp.

10. Technical Questionnaire

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

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

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

1. Subject of the Technical Questionnaire

1.1	Botanical name	*Carica papaya* L.
1.2	Common name	Papaya, Papaw

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 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 (2)	**Plant: height of attachment of first inflorescence**		
	low	Ishigaki Sango, Sekaki	3 [ ]
	medium	Sunrise, Tainung Nº 1	5 [ ]
	high	Cera, Dampit, Semangko	7 [ ]
5.2 (9)	**Leaf blade: ratio length/width**		
	low to medium	Johor	1 [ ]
	medium	Ishigaki Sango, Sunrise, Tainung Nº 1	2 [ ]
	medium to high	Golden	3 [ ]
5.3 (13)	**Petiole: length**		
	short	BT-K	3 [ ]
	medium	Ishigaki Sango, Sunrise, Tainung Nº 1	5 [ ]
	long	Dampit	7 [ ]
5.4 (36)	**Fruit: color of flesh**		
	yellow	Amarela, Cera, Kapoho	1 [ ]
	orange	Sunrise, Tainung Nº 1	2 [ ]
	red orange	Ishigaki Sango, Maradol	3 [ ]

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: shape*	*ovate*	*elliptic*

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

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:

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.

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]