

EAPVPF

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EAST ASIA PLANT VARIETY PROTECTION FORUM**Papaya***(Carica papaya L.)***GUIDELINES****FOR THE CONDUCT OF TESTS****FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

Alternative Names:

<i>Botanical name</i>	<i>English</i>			
<i>Carica papaya</i> L.	Papaya, Papaw			

The purpose of these guidelines (“Test Guidelines”) is to fulfill the activities under the EAPVP Forum on harmonization of Test Guidelines.

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GUIDELINES FOR THE CONDUCT OF TESTS (GCT) PAPAYA

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 seed 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.

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 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.

3.2. Testing Place

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

3.3. Conditions for Conducting the Examination

The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination. In particular, it is essential that the trees produce a satisfactory crop of fruit in each of the two growing cycles.

3.4. Test Design

- 3.4.1. Each test should be designed to result in a total of at least 20 plants in the case of seed-propagated plants or, in the case of vegetatively propagated varieties, in a total of at least 5 plants.
- 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 purpose of distinctness, all observations on single plants should be made on 20 plants or parts taken from each of 20 plants in the case of seed-propagated varieties disregarding any off-type plants. In the case of vegetatively propagated varieties all observations on single plants should be made on 5 plants or parts taken from each of 5 plants.

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. Vegetatively propagated varieties: for the assessment of uniformity of vegetatively propagated varieties, a population standard of 1% and an acceptance probability of 95% should be applied. In the case of a sample size of 5 plants, no off-type is allowed..
- 4.2.3. Seed-propagated varieties: the assessment of uniformity for seed-propagated varieties 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 case of doubt, stability may be tested, either by growing a further generation, or by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

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

- 5.2. Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.
- 5.3. The following have been agreed as useful grouping characteristics:
- a) Plant : height to first flower (characteristic 2)
 - b) Leaf blade : ratio length/width (characteristic 11)
 - c) Petiole : anthocyanin coloration (characteristic 19)
 - d) Fruit : ratio length/diameter at broadest part (characteristic 34)
 - e) Fruit : shape (characteristic 35)
 - f) Fruit : color of flesh (characteristic 44)
- 5.4. Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.
6. Introduction to the Table of Characteristics
- 6.1. Categories of Characteristics
- 6.1.1. Standard Test Guidelines Characteristics
- Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.
- 6.1.2. Asterisked Characteristics
- Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environment conditions render this inappropriate.
- 6.2. States of Expression and Corresponding Notes
- States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.
- 6.2.1. 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 type 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.
- (a) – (e) See explanation on the Table of Characteristics in Chapter 8.1
- (+) See explanation on the Table of Characteristics in Chapter 8.2

7. Table of Characteristics

UPOV	EA	PVP	Characteristic	Example Varieties	Note
1 (+) PQ	1	VG	Young plant: color of stem only green yellowish green brown green and purple only purple	IPB1-1, IPB 3, IPB 4, IPB 6, IPB 9	1 2 3 4 5
2 (*) (+) QN	2	VG/ MS	Plant: height of attachment of first inflorescence or flower Low Medium High	IPB 6, IPB 9 IPB 4, IPB 3, IPB1-1	3 5 7
3 (*) (+) QL	3	VG/	Plant: branching Absent Present	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	1 9
4 (*) (+) QN	4	VG/ MS (a)	Stem: diameter Small Medium Large	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	3 5 7
5 (*) (+) QN	5	VG/ MS (a)	Stem: number of nodes Few Medium Many	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	3 5 7
6 (*) (+) QN	6	VG/ MS (a)	Stem: length of internode Short Medium Long	IPB 9 IPB 4, IPB 6, IPB 3, IPB1-1	3 5 7
	7 PQ	VG (a)	<i>Stem: main color</i> <i>Green</i> <i>Grey</i> <i>Brown</i> <i>Purple</i>	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	1 2 3 4
	8. QN	VG/ MS	<i>Stem: density of fruit at column</i> <i>Sparse</i>		3

			<i>Medium Dense</i>	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	5 7
7 (+) QN	9	VG/ MS (b)	Leaf blade: length Short Medium Long	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	3 5 7
8 (+) QN	10	VG/ MS (b)	Leaf blade: width Narrow Medium Broad	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	3 5 7
9 (*) QN	11	VG/ MS (b)	Leaf blade: ratio length/width Very elongated Moderately elongated Slightly elongated	IPB 3, IPB 4, IPB1- 1 IPB 6, IPB 9	1 2 3
	12 QN	VG/ MS (b)	<i>Leaf blade: Depth of primary lobe</i> <i>Shallow</i> <i>Medium</i> <i>Deep</i>	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	3 5 7
	13 QN	VG/ MS (b)	<i>Leaf blade: number of primary lobes</i> <i>Few</i> <i>Medium</i> <i>Many</i>		1 2 3
	14 QL	VG (b)	<i>Leaf blade: presence of secondary lobes</i> <i>Absent</i> <i>Present</i>	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	1 9
10 (*) (+) QL	15	VG (b)	Leaf blade: presence of tertiary lobes Absent Present	IPB 6, IPB 3 IPB 4, IPB 9, IPB1- 1	1 9
11 (*) (+) QL	16	VG	Leaf: presence of flag leaflet Absent Present	IPB 4, IPB 6, IPB 3, IPB1-1 IPB 9	1 9
12 (+)	17	VG	Leaf blade: pubescence on lower side		

QL		(b)	Absent	IPB 6, IPB 3, IPB1-1	1
			Present	IPB 4, IPB 9	9
13 (*) QN	18	VG/ MS (b)	Petiole: length		
			Short		3
			Medium	IPB 4, IPB 6, IPB9, IPB 3, IPB1-1	5
			Long		7
14 QN	19	VG (b)	Petiole: anthocyanin coloration		
			Absent or very weak	IPB 6, IPB 9, IPB 3, IPB1-1	1
			Medium	IPB 4	3
			Very strong		5
	20 (+) QN	VG (b)	<i>Petiole: attitude of attachment to main stem</i>		
			<i>Upwards</i>	IPB 6, IPB 9, IPB 3, IPB1-1	1
			<i>Outwards</i>	IPB 4	2
			<i>Downwards</i>		3
	21 (+) PQ	VG (b)	<i>Petiole: main color</i>		
			<i>Green</i>	IPB 6, IPB 9, IPB 3, IPB1-1	1
			<i>Yellow</i>	IPB 4	2
			<i>Purple</i>		3
15 (*) QN	22	MG (a)	Time of flowering		
			Early		3
			Medium	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	5
			Late		7
16 (*) QN	23	VG (c)	Inflorescence: number of flowers		
			Few		3
			Medium	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	5
			Many		7
17 QN	24	VG/ MS (c)	Inflorescence: length of main axis		
			Short		3
			Medium	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	5
			Long		7
18 QN	25	VG (c)	Inflorescence: anthocyanin coloration of axis		
			Absent or very weak	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	1
			Medium		2
			Strong		3
	26 (+)	VG	Ovary: width bellow the apex		

	QN		Narrow Medium Broad	IPB 6 IPB 4, IPB 9 IPB 3, IPB1-1	3 5 7
	27 (+) QL	VG	<i>Stamen: Attachment to ovary</i> <i>At the base</i> <i>At middle third</i>		1 9
19 (+) QN	28	VG/ MS	Flower: length of corolla Short Medium Long	IPB 4, IPB 6, IPB 9, IPB1-1 IPB 3	3 5 7
20 (+) PQ	29	VG	Flower: color of corolla White Cream Yellow Green Purple	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	1 2 3 4 5
	30 (+) QL	VG	<i>Flower: anthocyanin coloration</i> <i>Absent</i> <i>Present</i>	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	1 9
21 (*) QN	31	VG/ MS	Peduncle: length Short Medium Long	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	3 5 7
22 (*) QN	32	VG/ MS	Fruit: length Short Medium Long	IPB 4, IPB 3, IPB1-1 IPB 6, IPB 9	3 5 7
23 (*) QN	33	VG/ MS	Fruit: diameter Small Medium Large	IPB 4, IPB 3 IPB 9, IPB1-1 IPB 6	3 5 7
24 (*) QN	34	VG/ MS	Fruit: ratio length/ diameter Very elongated Moderately elongated Slightly elongated	IPB 6, IPB 9 IPB 4, IPB3 IPB1-1	3 5 7
25 (*) (+) PQ	35	VG	Fruit: shape Ovate Elliptic	IPB 6	1 2

			Obovate Pyriform Oblong Obovate waisted	IPB1-1 IPB 4, IPB 3 IPB 9	3 4 5 6
26 (+) PQ	36	VG	Fruit: shape of stalk end Pointed Rounded Truncate Depressed	 IPB 4, IPB 3 IPB1-1 IPB 6 IPB 9	 1 2 3 4
27 QN	37	VG	Fruit: shape at distal end Rounded Weakly pointed Strongly pointed	 IPB1-1, IPB 9 IPB 3, IPB 4 IPB 6	 1 2 3
	38 (+) PQ	VG	<i>Fruit: main color at immature stage</i> <i>Light green</i> <i>Medium green</i> <i>Dark green</i> <i>Yellow</i>	 IPB 9, IPB1-1 <i>IPB 3</i> <i>IPB 6</i> <i>IPB 4</i>	 <i>1</i> <i>2</i> <i>3</i> <i>4</i>
28 (*) PQ	39	VG (d)	Fruit: main color Green Yellow green Yellow Medium orange Dark orange	 IPB 4, Pointed IPB 6, IPB 9, IPB 3	 1 2 3 4 5
	40 (+) QN	VG (e)	<i>Fruit: density of speckles</i> <i>Absent or very weak</i> <i>Medium</i> <i>Many</i>	 IPB 3, IPB1-1	 <i>1</i> <i>2</i> <i>3</i>
29 (*) (+) QN	41	VG (d)	Fruit: ridges Absent or very weak Weak Moderate Strong	 IPB 4, IPB 9, IPB 3, IPB1-1 IPB 6	 1 2 3 4
30 QN	42	VG (d)	Fruit: surface Smooth Medium Rough	 IPB 4, IPB 9, IPB1-1 IPB 3 IPB 6	 1 2 3
31 (*) (+) QN	43	VG (d)	Fruit: thickness of skin Thin Medium Thick	 IPB 4, IPB 6, IPB 9 IPB 3 IPB1-1	 1 2 3
32	44	VG	Fruit: color of flesh		

(*) PQ		(d)	Yellow Orange Red orange	IPB 1-1, IPB 6 IPB 4, IPB 9, IPB 3	1 2 3
33 QN	45	VG (d)	Fruit: firmness of flesh Soft Medium Firm	IPB 4, IPB 6, IPB 9, IPB 1-1 IPB 3	3 5 7
34 (+) QN	46	MS (d)	Fruit: sweetness of flesh Low Medium High	IPB 6 IPB 4, IPB 9, IPB 3, IPB 1-1	3 5 7
35 QN	47	VG (d)	Fruit: aroma of flesh Weak Moderate Strong	IPB 9, IPB 3, IPB 1-1 IPB 6 IPB 4	1 2 3
	48 (+) QN	VG/ MS (d)	<i>Fruit: thickness of flesh</i> <i>Thin</i> <i>Medium</i> <i>Thick</i>	IPB 4 IPB 6, IPB 9, IPB 3 IPB 1-1	3 5 7
36 QN	49	VG (d)	Fruit: abundance of placental tissue Scarce Moderate Abundant	IPB 6, IPB 9 IPB 3, IPB 1-1 IPB 4	3 5 7
37 (*) (+) QN	50	VG/ MS (d)	Fruit: width of central cavity Narrow Medium Broad	IPB 9 IPB 4, IPB 3, IPB 1-1 IPB 6	3 5 7
38 (*) (+) PQ	51	VG (d)	Fruit: shape of central cavity Circular Angular Stellate type 1 Stellate type 2 Irregular	IPB 6 IPB 4, IPB 9 IPB 3, IPB 1-1	1 2 3 4 5
39 (*) QN	52	VG/ MS	Fruit: number of seeds Absent or very few Few Medium Many	IPB 6 IPB 9 IPB 4, IPB 3, IPB 1-1	1 3 5 7

			Very many		9
40 PQ	53	VG	Seed: color Grey yellow Grey Medium brown Dark brown Black	IPB 6, IPB 3, IPB1-1 IPB 4, IPB 9	1 2 3 4 5
41 QN	54	VG/ MS	Seed: length Short Medium Long	IPB 3, IPB1-1 IPB 4 IPB 6, IPB 9	3 5 7
42 QN	55	VG/ MS	Seed: width Narrow Medium Broad	IPB 4 IPB 9, IPB 3, IPB1-1 IPB 6	3 5 7
43 QN	56	VG/ MS	Seed: ratio length/width Elongated Circular Compressed	IPB 4, IPB 9 IPB 6 IPB 3, IPB1-1	1 2 3
44 (+) QN	57	VG	Seed: position of broadest part At middle Slightly towards base Strongly toward base	IPB 6, IPB 3, IPB1-1 IPB 4, IPB 9	1 2 3
	58 QL	VG	<i>Seed: sarcotesta appearance</i> <i>Generally translucent</i> <i>Generally opaque</i>	IPB 6, IPB 3, IPB1-1 IPB 4, IPB 9	1 3
45 QN	59	VG	Seed: amount of mucilage Small Moderate Large	IPB 4, IPB 6, IPB 9, IPB 3, IPB1-1	1 2 3

8. Explanations on the Table of Characteristics

8.1. Explanations covering several characteristic

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

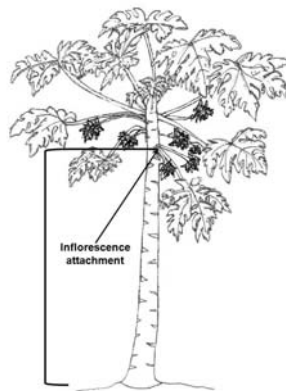
- (a) Plant and stem: Observations on the plant and stem should be made when the first inflorescence or single flower has appeared.
- (b) Leaf blade and petiole: Observations on the leaf blade and petiole should be made on mature leaves. Leaves should be taken from the middle third of the current season's growth when the first inflorescence or single flower fruit 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. Observations must be made only on hermaphrodite or female plants, according to the type of variety that will be tested.
- (d) Peduncle, fruit and seed: Observations on the peduncle, fruit and seed should be made on 5 typical fruits, taken from the middle part of the fruiting region at the time of harvest maturity. Seed characteristics should only be observed on fully-developed seeds. Observation must be made only on the type of variety that will be tested: hermaphrodite or female plants.
Seed characteristics should only be observed on fully-developed seeds.
- (e) Ripe fruit: Observations on the ripe fruit should be made when the color change is complete.

8.2 Explanations for individual characteristics

Ad. 1: Young plant: color of stem

In the case of seed propagated varieties, the color of stem should be observed when the first node is formed. In the case of vegetatively propagated varieties, the color of stem should be observed when the first node is formed of new growth.

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



Ad. 3: Plant: branching

The branching should be observed at the beginning of flowering.

Ad. 4: Stem: diameter

The diameter should be observed half-way up the stem, at the beginning of flowering.

Ad. 5: Stem: number of nodes

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

Ad. 6: Stem: length of internode

The length of internode should be observed midway between the ground and the first inflorescence.

Ad. 9: Leaf blade: length

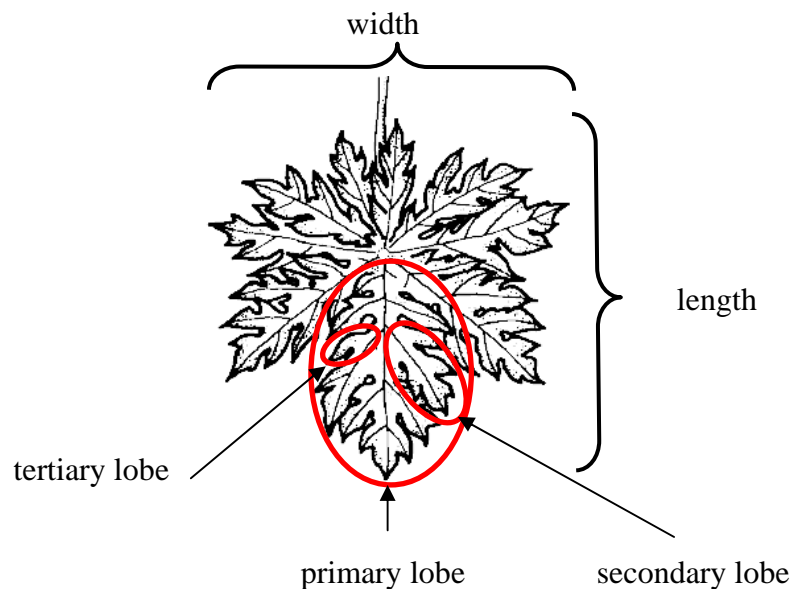
Ad. 10: Leaf blade: width

Ad. 12: Leaf blade: Depth of primary lobe

Ad. 13: Leaf blade: number of primary lobes

Ad. 14: Leaf blade: presence of secondary lobes

Ad. 15: Leaf blade: presence of tertiary lobes



Ad. 16: Leaf: presence of flag leaflet



1
absent



9
present

Ad. 17: Leaf blade: pubescence on lower side

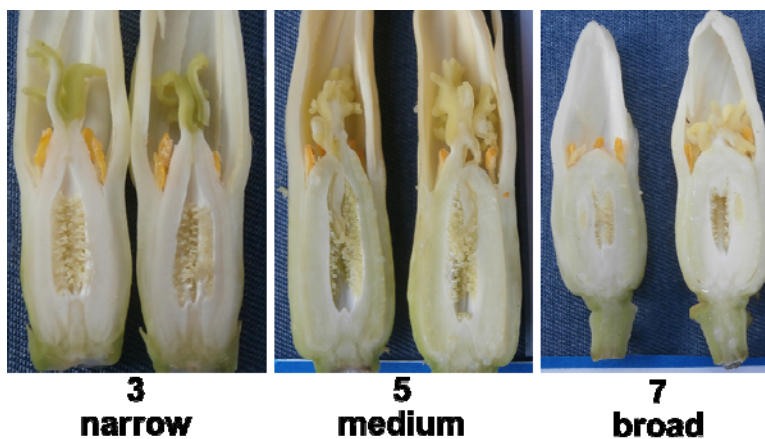
Observations on pubescence should be made with the aid of a magnifying glass.

Ad. 20: Petiole: attitude of attachment to main stem

To be observed on the petiole which closely attached to fully blooming flowers

Ad. 21: Petiole: main color

Ad. 26: Ovary: width bellow the apex



Ad. 27: Stamen: Attachment to ovary

To be observed on fully booming flower

Ad. 28: 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


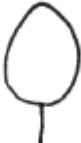




Ad. 29: Flower: color of corolla

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. 30: Flower: anthocyanin coloration

To be observed on matured flower bud, just before bloom

Ad.35: Fruit: shape

		< broadest part >		
		(below middle)	at middle	(above middle)
< lateral outline >	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. 36: Fruit: shape of stalk end



1
pointed



2
rounded



3
truncate

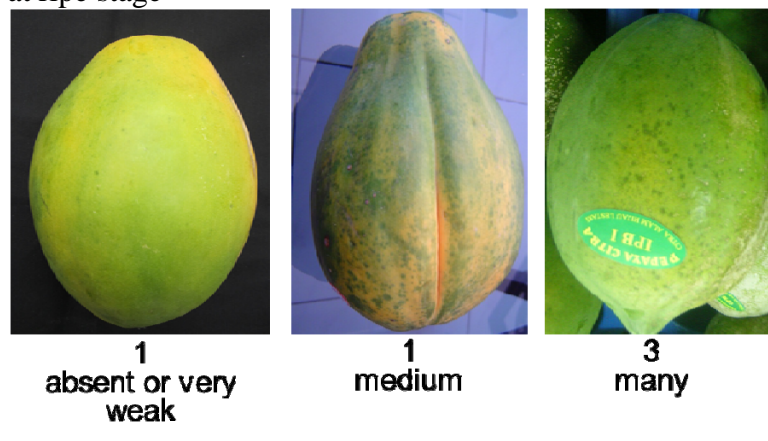


4
depressed

Ad. 38: Fruit: main color at immature stage
To be assess 2 months after fruit set

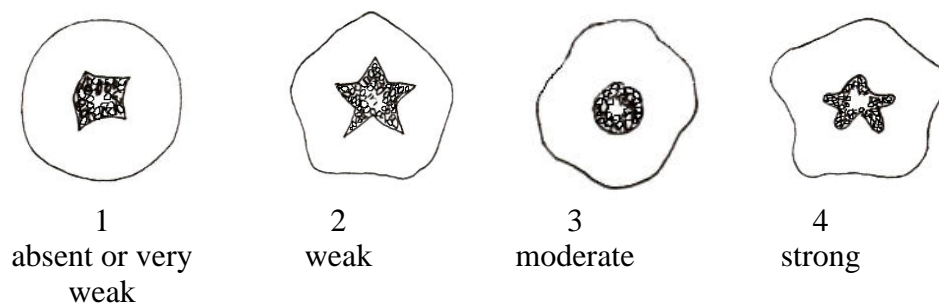


Ad. 40: Fruit: density of speckles
To be assess at ripe stage



Ad. 41: Fruit: ridges

To be observed in transverse section.



Ad. 43: Fruit: thickness of skin

The thickness of the skin is observed in transverse section.

Ad. 46: Fruit: sweetness of flesh

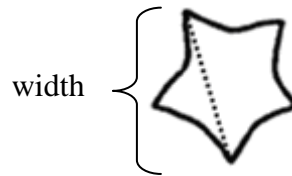
To be measured by refractometer as total soluble solids content.

Ad. 48: Fruit: thickness of flesh

To be observed at the broadest part of fruits

Ad. 50: Fruit: width of central cavity

The width of the central cavity should be observed at the broadest part.



Ad. 51: Fruit: shape of central cavity



1
Circular



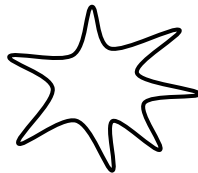
2
angular



3
star-shaped

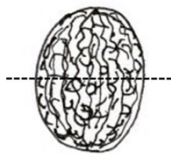


4
irregular

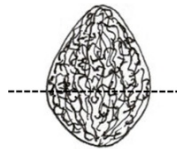


5
stellate

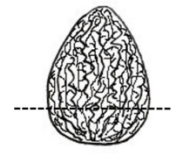
Ad. 58: Seed: position of broadest part



1
at middle



2
slightly towards base



3
strongly towards base

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)
<p style="text-align: center;">TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>		
<p>1. Subject of the Technical Questionnaire</p> <p>1.1 Latin name <input type="text" value="Carica papaya L."/></p> <p>1.2 Common name <input type="text" value="Papaya"/></p>		
<p>2. Applicant</p> <p>Name <input type="text"/></p> <p>Address <input type="text"/></p> <p>Telephone No. <input type="text"/></p> <p>Fax No. <input type="text"/></p> <p>E-mail address <input type="text"/></p> <p>Breeder (if different from applicant) <input type="text"/></p>		
<p>3. Proposed denomination and breeder's reference</p> <p>Proposed denomination (if available) <input type="text"/></p> <p>Breeder's reference <input type="text"/></p>		

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

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
<p>4.2 Method of propagating the variety</p> <p>4.2.1 Seed-propagated varieties</p> <p>(a) Cross-pollination</p> <p>(b) Hybrid []</p> <p>(c) Other [] (please provide details)"</p> <div></div> <p>4.2.1 Vegetative propagation</p> <p>(a) cuttings []</p> <p>(b) <i>in vitro</i> propagation []</p> <p>(c) other (state method) []</p> <p>4.2.3 Other [] (please provide details)"</p> <div></div>		

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 (2)	Plant: height of attachment of first inflorescence or flower		
	low	IPB 6, IPB 9	3[]
	medium	IPB 4, IPB 3, IPB1-1	5[]
	high	-	7[]
5.2 (11)	Leaf blade: ratio length/width		
	Very elongated	IPB 3, IPB 4, IPB1-1	1[]
	Moderately elongated	IPB 6, IPB 9	2[]
	Slightly elongated		3[]
5.3 (34)	Fruit: ratio length/diameter		
	Very elongated	IPB 6, IPB 9	3[]
	Moderately elongated	IPB 4, IPB3	5[]
	Slightly elongated	IPB1-1	7[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Characteristics	Example Varieties	Note
5.4 (35)	Fruit: shape		
	Ovate		1[]
	Elliptic	IPB 6	2[]
	Obovate	IPB 1-1	3[]
	Pyriform	IPB 4, IPB 3	4[]
	Oblong	IPB 9	5[]
	Obovate waisted		6[]
	Characteristics	Example Varieties	Note

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: shape</i>	<i>ovate</i>	<i>elliptic</i>

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
<p>#7. Additional information which may help in the examination of the variety</p> <p>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?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>(If yes, please provide details)</p> <p>7.2 Are there any special conditions for growing the variety or conducting the examination?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>(If yes, please provide details)</p> <p>7.3 Other information</p> <p>A representative color image of the variety should accompany the Technical Questionnaire.</p>		
<p>8. Authorization for release</p> <p>(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>(b) Has such authorization been obtained?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>If the answer to (b) is yes, please attach a copy of the authorization.</p>		

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
<p>9. Information on plant material to be examined or submitted for examination.</p> <p>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.</p> <p>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:</p> <p>(a) Microorganisms (e.g. virus, bacteria, phytoplasma) Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p><input type="checkbox"/></p>		

(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]