

**UPOV**

**TG/123/4(proj.3)**

**ORIGINAL:** English

**DATE:** 2005-08-23

**INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS**

GENEVA

**DRAFT**

**BANANA**

UPOV Codes: MUSAA\_ACU; MUSAA\_PAR

*Musa acuminata* Colla; *Musa* × *paradisiaca* L.  
(*M. acuminata* Colla x *M. balbisiana* Colla)

**GUIDELINES**

**FOR THE CONDUCT OF TESTS**

**FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

*prepared by experts from Brazil and France/CIRAD*

*to be considered by the Technical Working Party for Fruit Crops at its thirty-sixth session,  
to be held in Kôfu, Japan from September 5 to 9, 2005*

Alternative Names: \*

<i>Latin</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Musa acuminata</i> Colla	Banana, Cavendish banana, Chinese banana, Dwarf banana	Bananier, Bananier nain	Banane, Zwergbanane	Bananera, Banano, Platanera, Plátano
<i>Musa</i> × <i>paradisiaca</i> L. ; <i>M. acuminata</i> Colla × <i>M. balbisiana</i> Colla				

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](http://www.upov.int)), for the latest information.]

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## 1. Subject of these Test Guidelines

1.1 These Test Guidelines apply to all varieties of *Musa acuminata* Colla and *Musa ×paradisica* L. (*M. acuminata* Colla x *M. balbisiana* Colla) of the family *Musaceae*.

1.2 It is noted that cultivated bananas have been derived from wild species *Musa acuminata* (A) and *Musa balbisiana* (B) either alone or in combinations. The cultivated bananas are classified into botanical groups according to their genome combination. The main groups found in the edible bananas, natural varieties or hybrids, are AA, AAA, AAB, ABB, AAAA, AAAB and AABB.

1.3 Each application should include a declaration of botanical group according to the genetic combination that could be checked if necessary.

## 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 corn (whole) or rhizome.

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

15 plants.

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

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

## 3. Method of Examination

### 3.1 *Number of Growing Cycles*

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

### 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*

3.3.1 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.

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

3.3.3 All observations should be made on the second ratoon or later in the plantation life.

### 3.4 *Test Design*

3.4.1 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.

3.4.2 The spacing of the plants should be specified.

### 3.5 *Number of Plants / Parts of Plants to be Examined*

Unless otherwise indicated, all observations should be made on 15 plants or parts taken from each of 10 plants. In the case of parts of plants, the number to be taken from each of the plants should be 2.

### 3.6 *Additional Tests*

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

## 4. Assessment of Distinctness, Uniformity and Stability

### 4.1 *Distinctness*

#### 4.1.1 *General Recommendations*

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

#### 4.1.2 *Consistent Differences*

The 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.

#### 4.2 *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, 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 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: (to review)

It is recommended that the competent authorities divide the triploid varieties (the AAA group) of *Musa acuminata* into subgroups and types which can be identified by the following characteristics:

1) Gros Michel (to review)

- (a) Fruit bunch: ratio length/width (characteristic 29) large
- (b) Fruit: shape of apex (characteristic 50) bottle-necked
- (c) Fruit: color of skin (characteristic 52) deep yellow

2) Cavendish (to review)

- (a) Fruit bunch: ratio length/width (characteristic 29) medium
- (b) Fruit: shape of apex (characteristic 50) blunt
- (c) Fruit: color of skin (characteristic 52) yellow-green to yellow

3) Dwarf Cavendish

Pseudostem: length (characteristic 1) very short

4) Giant Cavendish

Pseudostem: length (characteristic 1) short

5) Robusta

Pseudostem: length (characteristic 1) medium

6) Pisang Masak Hijau

Pseudostem: length (characteristic 1) long

7) Red and Green Red (to review)

- (a) Fruit bunch: ratio length/width (characteristic 29) small
- (b) Fruit: shape of apex (characteristic 50) blunt
- (c) Fruit: color of skin (characteristic 52) green or red

8) Prata and Pomme (to review)

9) Plantain Horn or Terra (to review)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

6. Introduction to the Table of Characteristics

6.1 *Categories of Characteristics*

6.1.1 Standard Test Guidelines Characteristics

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

### 6.1.2 Asterisked Characteristics

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

### 6.2 *States of Expression and Corresponding Notes*

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

### 6.3 *Types of Expression*

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

### 6.4 *Example Varieties*

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

### 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)–(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
<b>1.</b>	<b>Level of ploidy</b>					
(+)						
<b>QL</b>	diploid					2
	triploid					3
	tetraploid					4
<b>2.</b>	<b>Rhizome: number of suckers</b>					
(+)						
<b>QN</b>	few				Ouro	3
	medium				Nanicão	5
	many				Prata Anã	7
<b>3.</b>	<b>Pseudostem: length</b>					
(*)						
(+)						
<b>QN</b>	very short				Salta-do-Cacho, Fig Pomme Naine, Rajapuri	1
	short				Nanica, Dwarf Cavendish	3
	medium				Nanicão, Valery, Poyo Grand nain	5
	long				Prata comum, Locatan	7
	very long				Pacovan	9
<b>4.</b>	<b>Pseudostem: diameter</b>					
(+)						
<b>QN</b>	small				Caipira, Outo (Bocadillo)	3
	medium				Nanicão, Valery, Willians	5
	large				Prata Anã	7



	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
<b>5.</b>	<b>Pseudostem: shape</b>	<b>Brazil will prepare an illustration for 2006</b>				
<b>PQ</b>	conical				Mysore	1
	conical to cylindrical				Nanicão	2
	cylindrical				Grande Naine	3
<b>6.</b>	<b>Pseudostem: color</b>					
(+)						
<b>PQ</b>	yellow					1
	greenish yellow				Prata Anã	2
	light green					3
	medium green				D'Angola	4
	dark green					5
	redish green				Pacovan	6
	red					7
	purple/violet				Grande Naine	8
	blue					9
<b>7.</b>	<b>Pseudostem: dark spots</b>					
<b>QL</b>	absent				Figo	1
	present				Grande Naine	9
<b>8.</b>	<b>Pseudostem: color of dark spots</b>					
<b>PQ</b>	pink purple				Figo	1
	red				Grande Naine	2
	medium purple					3
	dark purple (arroxeadó)					4

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
<b>9.</b>	<b>Pseudostem: intensity of dark spots</b>						
<b>QN</b>	low				Figo	3	
	medium				Grande Naine	5	
	high					7	
<b>10.</b>	<b>Pseustem: color on the inner side on the base of the sheath</b>						
	: <b>or like IPGRI : Pseudostem : predominant underlying colour</b>						
<b>PQ</b>	yellowish green				Ouro	1	
	green				D'Angola, Prata Anã	2	
	red				Figue Rose Naine	3	
	pink				Grande Naine	4	
<b>11.</b>	<b>Leaf: development of crook</b>						
<b>QN (a)</b>	weak				Grande Naine	3	
	medium				<i>Prata Anã</i>	5	
	strong				Figo Anão	7	
<b>12.</b>	<b>Leaf: attitude</b>						
(*)							
(+)							
<b>PQ (a)</b>	upright				Branca	1	
	intermediate				Nanicão	2	
	drooping				Maçã	3	

English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
<b>13.</b> (* (+)	<b>Leaf: base of petiole</b>				
<b>PQ</b>	<b>(a)</b>	open with spreading margins			1
		wide with erect margins			2
		straight with erect margins			3
		margins curved inward			4
		margins overlapping			5
<b>14.</b>	<b>Leaf: length of petiole</b>	<b>Brazil to check for 2006</b>			
<b>QN</b>	<b>(a)</b>	short		Nanica	3
		medium		Nanicão	5
		long		Maçã	7
<b>15.</b>	<b>Leaf: color of midrib on lower side</b>				
<b>PQ</b>	<b>(a)</b>	green		Prata Anã	1
		pink		Caipira	2
		purple		Thap Maeo	3
<b>16.</b> (* (+)	<b>Leaf: shape of the blade base</b>				
<b>?</b>	<b>(a)</b>	both sides rounded		Figo Anão	1
		one rounded and one pointed		Maçã	2
		both sides pointed		Grande Naine	3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
<b>17.</b>	<b>Leaf: intensity of wax on lower surface of the blade</b>					
<b>QN</b>	weak	[to check if note (a) should be added]				3
	medium					5
	strong					7
<b>18.</b>	<b>Leaf blade: length</b>					
<b>QN (a)</b>	short				Nanica	3
	medium				Nanicão	5
	long				Branca, Pacovan	7
<b>19.</b>	<b>Leaf blade: width</b>					
<b>QN (a)</b>	narrow					3
	medium					5
	broad					7
<b>20.</b>	<b>Leaf blade: ratio length/width</b>					
<b>QN (a)</b>	low					3
	medium					5
	high					7
<b>21.</b>	<b>Leaf blade: color of lower side of the young leaf</b>					
<b>(+)</b>		Brazil will check for 2006.				
<b>?</b>	green	[to check if note (a) should be added]				1
	purple					2
<b>22.</b>	<b>Leaf blade: shape of apex</b>					
<b>PQ (a)</b>	acute	Brazil will check example varieties for 2006.				1
	obtuse					2
	rounded					3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
<b>23.</b>	<b>Leaf blade: appearance of upper side</b>					
<b>?</b>	<b>(a)</b> opaque					1
	bright					2
<b>24.</b>	<b>Leaf blade: intensity of green color on the lower side – wax removed</b>					
	<b>Brazil will check example varieties for 2006.</b>					
<b>QN</b>	<b>(a)</b> light				Ouro, Maçã	3
	médium				Pacovan	5
	dark				Figo Anão	7
<b>25.</b>	<b>Bunch peduncle: length</b>					
	<b>(+)</b>					
<b>QN</b>	<b>(b)</b> short				Ouro, Nanica	3
	medium				Pacovan, Grande Naine	5
	long				Maçã, São Domingos	7
<b>26.</b>	<b>Bunch peduncle: diameter</b>					
<b>QN</b>	<b>(b)</b> small				Ouro	3
	médium				Pacovan, Prata	5
	large				Grande Naine	7
<b>27.</b>	<b>Bunch peduncle: pilosity</b>					
<b>QL</b>	<b>(b)</b> absent					1
	present					9
<b>28.</b>	<b>Bunch: attitude</b>					
<b>QN</b>	<b>(b)</b> parallel to pseudostem					1
	intermediate (inclinado)					2
	horizontal					3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
<b>29.</b>	<b>Bunch: shape</b>					
<b>PQ</b>	<b>(b)</b> cylindric	<b>Brazil will check example varieties for 2006 and provide illustrations.</b>			Grande Naine	1
	slightly conical				Nanica	2
	clearly conical				Prata Anã	3
<b>30.</b>	<b>Bunch: insertion of the hands</b>					
<b>?</b>	<b>(b)</b> turned up hands	<b>Brazil will check for 2006.</b>			Terra	1
	turned up and horizontal				Nanicão	3
	horizontal				Pacovan, São Tomé	5
<b>31.</b>	<b>Bunch: hands compacity</b>					
<b>QN</b>	<b>(b)</b> sparse				Figo	3
	medium				Nanicão	5
	compact				Thap Maeo	7
<b>32.</b>	<b>Bunch: number of hands</b>					
<b>QN</b>	<b>(b)</b> low				D'Angola	3
	medium				Prata comum	5
	high				Thap Maeo, Grande Naine	7
<b>33.</b>	<b>Bunch: number of fruits per hand</b>					
<b>QN</b>	<b>(b)</b> low				D'Angola	3
	medium				Prata comum	5
	high				Thap Maeo, Grande Naine	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
<b>34.</b>	<b>Bunch: attitude of the rachis</b>					
(*) (+)						
<b>?</b>	(b) vertical				Branca	1
	(d) inclined				Prata	3
	curved				Maçã	5
	recurved or "s" shaped				Gros Michel	7
<b>35.</b>	<b>Bunch: scars of the rachis</b>	Brazil will check example varieties for 2006.				
QN	(b) weakly prominent				Prata Zulu, Ouro	3
	(d) moderately prominent				Nanica	5
	strongly prominent				Ouro-da-Mata	7
<b>36.</b>	<b>Bunch: persistence of the bracts of the rachis</b>					
<b>?</b>	(b) persistent	to read "strongly persistent"?			Prata Anã	1
	(d) partially persistent	[order of states to be reviewed]			Grande Naine	3
	not persistent				Maçã	5
<b>37.</b>	<b>Bunch: persistence of neutral flowers of the rachis</b>					
<b>?</b>	(b) persistent	to read "strongly persistent"?			Terra	1
	(d) partially persistent	[order of states to be reviewed]			Grande Naine	3
	not persistent				Maçã	5
<b>38.</b>	<b>Fruit: curvature longitudinal</b>					
QN	(c) weak				Figo, Pacovan	3
	medium				Nanicão	5
	strong				Nanica	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>39.</b>	<b>Fruit: cross section</b>					
(+)						
<b>?</b>	(c) pronounced ridges				Figo	1
	slightly ridged			[order of states to be reviewed]	Terra, Prata Anã	3
	rounded				Ouro, Caipira	5
<b>40.</b>	<b>Fruit: length</b>					
(*)						
(+)						
<b>QN</b>	(c) short				Prata	3
	medium				Nanicão	5
	long				Terra	7
<b>41.</b>	<b>Fruit: diameter (excluding sharp edges)</b>					
(*)						
<b>QN</b>	(c) small				Ouro	3
	medium				Grande Naine	5
	large				Figo, D'Angola	7
<b>42.</b>	<b>Fruit: length of pedicel</b>					
<b>QN</b>	(c) short				Ouro, Caipira	3
	medium				Prata	5
	long				Terra	7
<b>43.</b>	<b>Fruit: shape of apex</b>					
(*)						
(+)						
<b>PQ</b>	(c) rounded				Prata Ponta Aparada, Ouro	1
	pointed				Terra	2
	bottle-neck				Prata	3



	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
<b>44.</b>	<b>Fruit: thickness of skin (stage 6 for ripe fruit)</b>					
<b>QN</b>	(c) thin				Ouro, Maçã	3
	medium				Nanica	5
	thick				Terra, Pacovan	7
<b>45.</b>	<b>Fruit: color of skin before maturity</b>					
<b>PQ</b>	(c) green				São Tomé	1
	greenish yellow				Cavendish	2
	weak yellow				Maça	3
	medium yellow				Prata comum	4
	strong yellow				Ouro	5
	reddish				Caru Roxa	6
	brown					7
<b>46.</b>	<b>Fruit: color of skin at maturity</b>					
<b>PQ</b>	(c) green				São Tomé	1
	greenish yellow				Cavendish	2
	weak yellow				Maça	3
	medium yellow				Prata comum	4
	strong yellow				Ouro	5
	reddish				Caru Roxa	6
	brown					7
<b>47.</b>	<b>Fruit detachment resistance (stage 6 for ripe fruit)</b>					
<b>QN</b>	low				Maça	3
	medium				Nanicao	5
	high				Ouro, Caipira	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>48.</b>	<b>Fruit: color of pulp (stage 6 for ripe fruit)</b>					
<b>PQ (c)</b>	white				Maçã	1
	dull white				Prata	2
	cream				Caru Roxa e Verde	3
	yellow				Nanicão	4
	orange				Terra	5
	pink				São Domingos	6
<b>49.</b>	<b>Fruit: consistency of pulp (stage 6)</b>					
<b>QN (c)</b>	very soft				Grande Naine	1
	moderately soft				Maçã	3
	hard				Terra	5
<b>50.</b>	<b>Bunch: shape of male bud</b>					
<b>(+)</b>						
<b>PQ</b>	slim					1
	lanceolate				Pacovan	2
	oval					3
	wide oval (elliptic)				Prata	4
	rounded					5
<b>51.</b>	<b>Bunch: overlap of bracts of male bud</b>					
<b>QN</b>	absent or very weak				Prata Anã	1
	weak					3
	medium				Pacovan	5
	strong				Nanicão	7
	very strong					9

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) All observations on the leaf should be made on the third leaf from the apex at [harvest time] (TG/123/3, 1989) the moment of inflorescence emerging of those fruit bunches which were originally marked for observation.
- (b) All observations on the fruit bunch should be done at fruit maturity (harvest time) [on those bunches which were originally marked for flower observations]. (TG/123/3, 1989).
- (c) All observations on the fruit should be made on a median standard hand on a median standard fruit .
- (d) All observations on inflorescence and flower should be made at the time of full flowering.

## 8.2 *Explanations for individual characteristics*

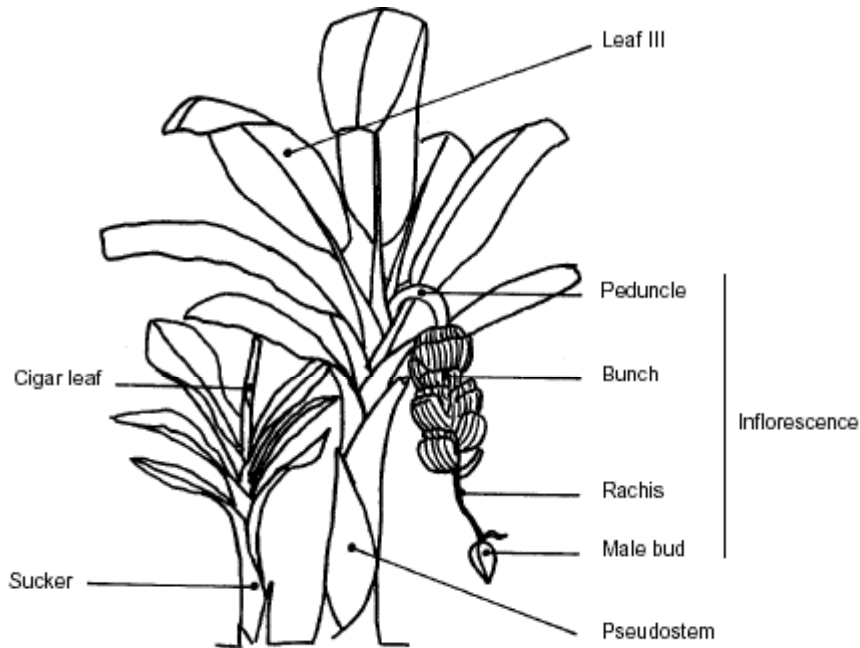
### Ad. 1: Level of ploidy

To agree genomic group to botanical name.

### Ad. 2: Rhizome: number of suckers

### Ad. 3: Pseudostem: length

### Ad. 4: Pseudostem: diameter



### Ad. 3: Pseudostem: length

The length of the pseudostem should be measured from the ground level to the crook of the stalk, at the beginning of flowering.

### Ad. 4: Pseudostem: diameter

The diameter of the pseudostem should be observed at the height of one meter from ground level, at the beginning of flowering.

### Ad. 6: Pseudostem: color

Recorded without removing the external sheaths. The color of oldest dry sheaths should not be considered.

Ad. 12: Leaf: attitude

The leaf attitude should be observed at harvest time, at the moment of inflorescence emerging of those fruit bunches which were originally marked for observation.



1  
upright

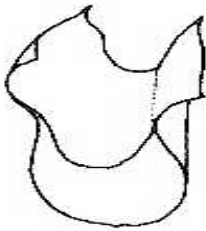


2  
intermediate

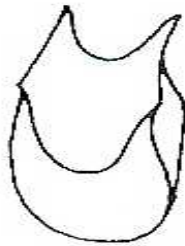


3  
drooping

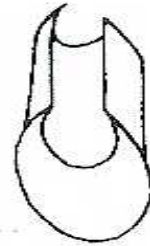
Ad. 13: Leaf: base of petiole



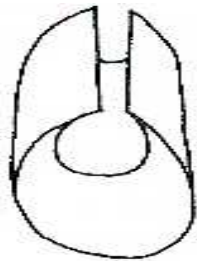
1  
open with spreading margins



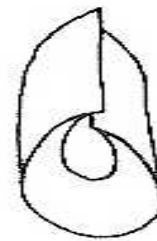
2  
wide with erect margins



3  
straight with erect margins

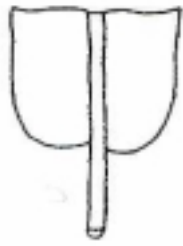


4  
margins curved inward



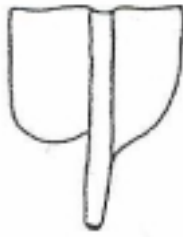
5  
margins overlapping

Ad. 16: Leaf : shape of the blade base



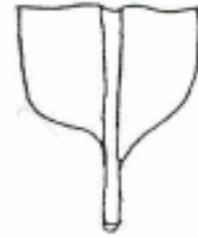
1

both sides rounded



2

one rounded and one pointed



3

both sides pointed

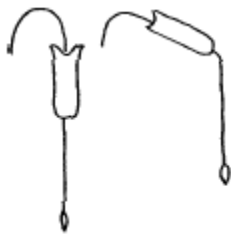
Ad. 21: Leaf blade: color of lower side of the young leaf

The color of the leaf blade of lower side of the young leaf should be determined from the first leaf before flowering

Ad. 25: Bunch peduncle: length

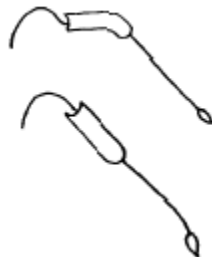
The length of the fruit bunch should be determined from the attachment of the proximal fruit cluster to that of the distal well-developed fruit cluster.

Ad. 34: Bunch: attitude of the rachis



1

vertical



3

inclined



5

curved



7

recurved or "s" shaped

Ad. 39: Fruit: cross section



1

pronounced ridge



2

slightly ridged



3

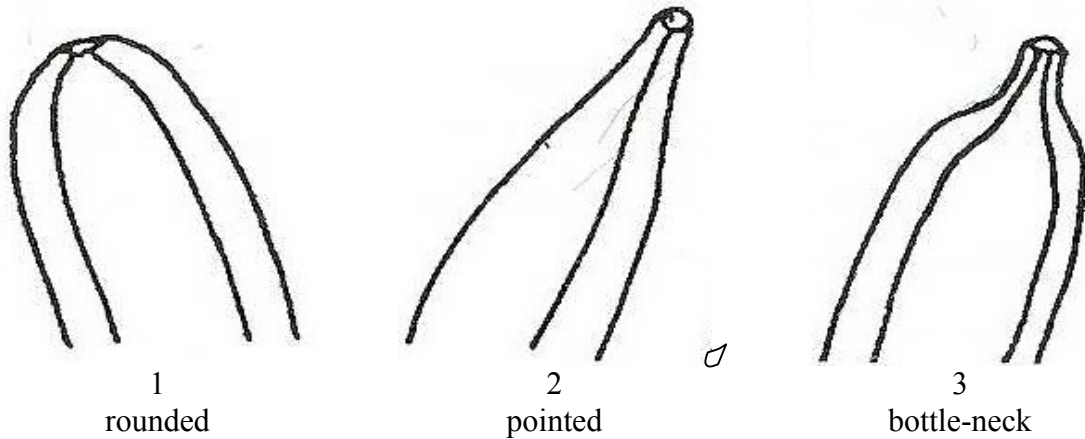
rounded

Ad. 40: Fruit: length

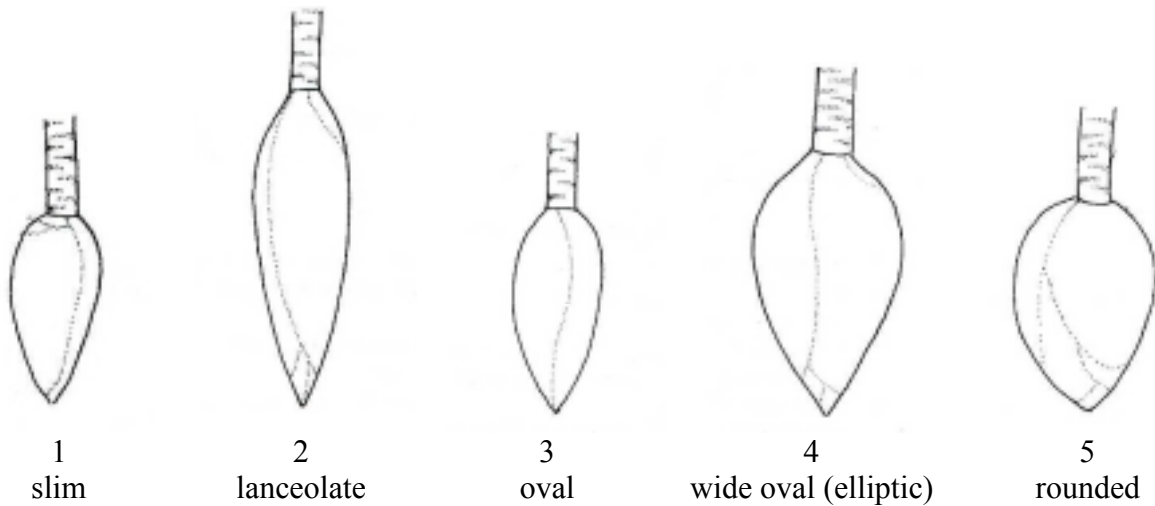
The length of the fruit should be determined on the outer (convex) side from where the fruit widens at the stalk end to the apical point.

*France/CIRAD proposes on the inner cluster fruit (Brazil will check for 2006).*

Ad. 43: Fruit: shape of apex.



Ad. 50: Bunch: shape of male bud



9. Literature

Daniels, J.W., March-April 1986: "Banana cultivars in Australia," Queensland Agriculture Journal, AU, pp. 75-84

De Langhe, E., 1969: "Bananas, Outlines of perennial crop breeding in the tropics," Miscellaneous papers 4, Landbouwhogeschool, Wageningen, NL. pp. 53-78.

Purseglove, J.W., 1972: "Tropical Crops: Monocotyledons," Longman, London, GB, pp. 351-355

Samson, J.A., 1980: "Tropical Fruits," Longman, London, GB, pp. 133-138

Simmonds, N.W., 1966: "Bananas," 2nd ed., Longmans, Green, London, GB, pp. 44-128

Turner, D.W. and Hunt, N., 1984: "Growth, yield and leaf nutrient composition of 30 banana varieties in subtropical New South Wales," Dept. of Agriculture New South Wales, AU, Technical Bulletin 31, pp. 1-36

Stover, R.H., 1988: "Variation and Cultivar Nomenclature in Musa, AAA Group, Cavendish Subgroup," Fruits d'Outre-mer, Vol. 43, No. 6, pp. 353-357, FR

**IPGRI**



10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)
<b>TECHNICAL QUESTIONNAIRE</b> to be completed in connection with an application for plant breeders' rights		
<b>1. SUBJECT OF THE TECHNICAL QUESTIONNAIRE</b>		
1.1.1 Botanical name	<input type="text" value="Musa acuminata Colla"/>	<input type="checkbox"/>
1.1.2 Common name	<input type="text" value="BANANA"/>	
1.1.3 Botanical group (please complete e.g. AA, AAA)	<input type="text"/>	
<hr/>		
1.2.1 Botanical name	<input type="text" value="Musa × paradisiaca L.&lt;br/&gt;(M. acuminata Colla × M. balbisiana Colla)"/>	<input type="checkbox"/>
1.2.2 Botanical group (please complete e.g. AAB, ABB)	<input type="text"/>	
<b>2. APPLICANT</b>		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	Fax No. <input type="text"/>
E-mail address	<input type="text"/>	
Breeder (if different from applicant)	<input type="text"/>	
<b>3. PROPOSED DENOMINATION AND BREEDER'S REFERENCE</b>		
Proposed denomination (if available)	<input type="text"/>	
Breeder's reference	<input type="text"/>	

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

Variety resulting from:

4.1.1 Crossing

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

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

(c) 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)

4.2 Method of propagating the variety

---

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

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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
<b>TO ADD CHARACTERISTICS</b>		

6. Similar varieties and differences from these varieties

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

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the <b>similar</b> variety(ies)	Describe the expression of the characteristic(s) for <b>your</b> candidate variety
<i>Example</i>		<i>(example to be inserted)</i>	<i>(example to be inserted)</i>

**TO ADD EXAMPLES**

Comments:

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

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

Yes [ ] No [ ]

(If yes, please provide details)

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

A representative color photograph 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.

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

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

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

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

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

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

.....

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

Applicant's name:

Signature

Date:

[End of document]