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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**to be considered by the Technical Working Party for Fruit Crops
at its thirty-seventh session, to be held in Salvador, Bahia State, Brazil,
from August 21 to 25, 2006*

Alternative Names:*

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

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
1. SUBJECT OF THESE TEST GUIDELINES.....	3
2. MATERIAL REQUIRED	3
3. METHOD OF EXAMINATION.....	3
3.1 Number of Growing Cycles	3
3.2 Testing Place	3
3.3 Conditions for Conducting the Examination.....	3
3.4 Test Design.....	4
3.5 Number of Plants / Parts of Plants to be Examined.....	4
3.6 Additional Tests	4
4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY	4
4.1 Distinctness	4
4.1.1 <i>General Recommendations</i>	4
4.1.2 <i>Consistent Differences</i>	4
4.1.3 <i>Clear Differences</i>	4
4.2 Uniformity.....	5
4.3 Stability	5
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL.....	5
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS	7
6.1 Categories of Characteristics.....	7
6.1.1 <i>Standard Test Guidelines Characteristics</i>	7
6.1.2 <i>Asterisked Characteristics</i>	7
6.2 States of Expression and Corresponding Notes.....	7
6.3 Types of Expression	7
6.4 Example Varieties	8
6.5 Legend.....	8
7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES	9
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS	20
8.1 Explanations covering several characteristics	20
8.2 Explanations for individual characteristics	21
9. LITERATURE.....	27
10. TECHNICAL QUESTIONNAIRE.....	28

1. Subject of these Test Guidelines

1.1 These Test Guidelines apply to all varieties of *Musa acuminata* Colla and *Musa ×paradisiaca* 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 corm (whole), rhizome or vitroplant.

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

20 corms, rhizomes or vitroplants.

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 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 productive cycle 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.

3.5 *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 varieties on the AAA group of *Musa acuminata* into subgroups and types which can be identified by the following characteristics:

- 1) Gros Michel
 - (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
 - (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
 - (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

Also, it is recommended that the competent authorities divide the triploid varieties of the AAB group (*Musa acuminata* x *M. Balbisiana*) into subgroups and types which can be identified by the following characteristics:

- 8) Prata and Pomme
 - (a) Fruit: cross section (characteristic 39) slightly ridged
 - (b) Fruit: length (characteristic 40) short
 - (c) Fruit: shape of apex (characteristic 43) pointed
 - (d) Fruit: thickness of skin (characteristic 44) medium
 - (e) Fruit: color of pulp (characteristic 48) dull white
- 9) Plantain Horn or Terra
 - (a) Fruit: cross section (characteristic 39) pronounced ridges
 - (b) Fruit: length (characteristic 40) long
 - (c) Fruit: shape of apex (characteristic 43) pointed
 - (d) Fruit: thickness of skin (characteristic 44) thick
 - (e) Fruit: color of pulp (characteristic 48) orange
 - (f) Fruit: consistency of pulp (characteristic 49) hard

- 10) Silk
- | | |
|--|-----------------|
| (a) Fruit: cross section (characteristic 39) | rounded |
| (b) Fruit: length (characteristic 40) | very short (1) |
| (c) Fruit: thickness of skin (characteristic 44) | thin |
| (d) Fruit: color of pulp (characteristic 48) | white |
| (e) Fruit: consistency of pulp (characteristic 49) | moderately soft |
- 11) Pacovan
- | | |
|--|-------------------|
| (a) Fruit: cross section (characteristic 39) | pronounced ridges |
| (b) Fruit: length (characteristic 40) | medium |
| (c) Fruit: shape of apex (characteristic 43) | pointed |
| (d) Fruit: thickness of skin (characteristic 44) | thick |
| (e) Fruit: color of pulp (characteristic 48) | dull white |
| (f) Fruit: consistency of pulp (characteristic 49) | moderately soft |

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
1.	Level of ploidy					
(+)						
QL	diploid				Sucrier (Ouro)(AA)	2
	triploid				Silk (Maçã), Prata (AAB)	3
	tetraploid				Golden Beauty (AAAA), Ouro-da-Mata (AAAB)	4
2.	VG Rhizome: number of suckers					
(+)						
QN	few				Sucrier (Ouro)	3
	medium				Nanicão	5
	many				Prata Anã	7
3.	VG/ Pseudostem: length					
(*)	MS					
(+)						
QN	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
4.	Pseudostem: diameter					
(+)						
QN	small				Yangambi Km 5 (Caipira), Outo (Bocadillo)	3
	medium				Nanicão, Valery, Willians	5
	large				Prata Anã	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
5.	Pseudostem: shape						
PQ	conical				Mysore	1	
	conical to cylindrical				Nanicão	2	
	cylindrical				Grande Naine	3	
6.	Pseudostem: color						
(+)							
PQ	yellow					1	
	greenish yellow				Prata Anã	2	
	light green					3	
	medium green				D'Angola	4	
	dark green					5	
	reddish green				Pacovan	6	
	red					7	
	purple/violet				Grande Naine	8	
	blue					9	
7.	Pseudostem: spots						
QL	absent				Blugoe, Figo	1	
	present				Figue Pomme Naine, Caipira	9	
8.	Pseudostem: color of spots						
PQ	pink purple					1	
	red				Grande Naine, Thap Maeo	2	
	medium purple				Caipira	3	
	dark purple				Preciosa	4	

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
9.	Pseudostem: intensity of spots					
QN	low				Thap Maeo	3
	medium				Grande Naine	5
	high				Preciosa	7
10.	Pseudostem: color on the inner side on the sheath base					
PQ	yellowish green				Sucrier (Ouro)	1
	green				D'Angola, Prata Anã	2
	red				Figue Rose Naine	3
	pink				Grande Naine	4
11.	Leaf: development of crown					
QN (a)	weak				Grande Naine	3
	medium				Prata Anã	5
	strong				Figo Anão	7
12. (* (+)	Leaf: attitude					
PQ (a)	upright				Branca	1
	spreading				Nanicão	2
	drooping				Silk (Maçã)	3
13. (* (+)	Petiole: orientation of wings at base					
PQ (a)	spreading					1
	erect					2
	slightly curved inward					3
	curved inward					4
	overlapping					5

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
14. (+)	Leaf: length of petiole					
QN	(a) short				Nanica	3
	medium				Nanicão	5
	long				Silk (Maçã)	7
15.	Leaf: color of midrib on lower side					
PQ	(a) green				Prata Anã	1
	pink				Yangambi Km 5 (Caipira)	2
	purple				Thap Maeo	3
16. (*) (+)	Leaf blade: shape of base					
QL	(a) both sides rounded				Figo Anão	1
	one rounded and one pointed				Silk (Maçã)	2
	both sides pointed				Grande Naine	3
17.	Leaf blade: intensity of wax on lower side					
QN	(a) weak					3
	medium					5
	strong					7
18.	Leaf blade: length					
QN	(a) short				Nanica	3
	medium				Nanicão	5
	long				Branca, Pacovan	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
19.	Leaf blade: width					
QN (a)	narrow					3
	medium					5
	broad					7
20.	Leaf blade: ratio length/width					
QN (a)	small					3
	medium					5
	large					7
21.	Leaf blade: shape of apex					
PQ (a)	acute					1
	obtuse					2
	rounded					3
22.	Leaf blade: glossiness of upper side					
QL (a)	dull				Grande Naine, Prata	1
	glossy				Bluggoe	2
23.	Leaf blade: intensity of green color on the lower side – wax removed					
QN (a)	light				Sucrier (Ouro), Silk (Maçã)	3
	medium				Pacovan	5
	dark				Figo Anão	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
24.	Peduncle: length					
	(+)					
QN	(b) short				Sucrier (Ouro), Nanica	3
	medium				Pacovan, Grande Naine	5
	long				Silk (Maçã), São Domingos	7
25.	Peduncle: diameter					
	(+)					
QN	(b) small				Sucrier (Ouro)	3
	médium				Pacovan, Prata	5
	large				Grande Naine	7
26.	Peduncle: pilosity					
QL	(b) absent				Prata Anã	1
	present				Nanicão	9
27.	Bunch: attitude					
	(+)					
QN	(b) drooping				Grande Naine	1
	semi drooping				Figue Pomme	2
	semi horizontal				Yangambi Km 5 (Caipira)	3
28.	Bunch: length					
	(+)					
PQ	(b) short				Sucrier (Ouro)	1
	medium				Pacovan	2
	long				Grande Naine	3
29.	Bunch: shape					
	Brazil will prepare an illustration for 2006					
QN	(b) cylindrical				Grande Naine	1
	intermediate				Nanica	2
	conical				Prata Anã	3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
30.	Bunch: hands attitude	Brazil will prepare an illustration for 2006				
?	(b) all turned up				Terra	1
	turned up horizontal				Nanicão	3
	horizontal				Pacovan, São Tomé	5
31.	Bunch: compactness of hands					
QN	(b) loose				Bluggoe	1
	medium				Nanicão	2
	compact				Thap Maeo	3
32.	Bunch: number of hands					
(*)						
QN	(b) few				D'Angola	3
	medium				Prata comum	5
	many				Thap Maeo, Grande Naine	7
33.	Bunch: number of fruits per hand	To check example varieties as they are the same as char. 32				
QN	(b) few				D'Angola	3
	medium				Prata comum	5
	many				Thap Maeo, Grande Naine	7
34.	Bunch: attitude					
(*)						
(+)						
PQ	vertical				Grande Naine, Branca	1
	inclined				Prata	2
	curved				Silk (Maçã)	3
	recurved or "s" shaped				Gros Michel	4

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
35.	Bunch: expression of scars on rachis					
QN	(c) weak				Gia Hui (Prata Zulu), Sucrier (Ouro)	3
	moderate				Nanica	5
	strong				Ouro-da-Mata	7
36.	Bunch: persistence of the bracts of the rachis					
	(c) not persistent				Silk (Maçã), Grande Naine	1
	persistent				Prata Anã	9
37.	Bunch: persistence of neutral flowers of the rachis					
	(c) not persistent				Silk (Maçã), Nanicão	1
	persistent				Terra	9
38.	Fruit: longitudinal curvature					
QN	(c) weak				Bluggoe, Pacovan	3
	medium				Nanicão	5
	strong				Nanica	7
39.	Fruit: expression of ridges (in cross section)					
(+)						
?	(c) absent				Sucrier (Ouro), Yangambi Km 5 (Caipira), Silk (Maçã)	1
	weakly expressed				Terra, Prata	3
	strongly expressed				Bluggoe, Terra, Pacovan	5

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
40. (*) (+)	Fruit: length					
QN	(d) short				Prata	3
	medium				Nanicão	5
	long				Terra	7
41. (*)	Fruit: diameter (excluding sharp edges)					
QN	(d) small				Sucrier (Ouro)	3
	medium				Grande Naine	5
	large				Bluggoe, D'Angola	7
42.	Fruit: length of pedicel					
QN	(d) short				Sucrier (Ouro), Yangambi Km 5 (Caipira)	3
	medium				Prata	5
	long				Terra	7
43. (*) (+)	Fruit: shape of apex					
PQ	(d) rounded				Prata Ponta Aparada, Sucrier (Ouro)	1
	pointed				Terra	2
	bottle-necked				Prata	3
44.	Fruit: thickness of skin (stage 6 for ripe fruit)					
QN	(d) thin				Sucrier (Ouro), Silk (Maçã)	3
	medium				Nanica	5
	thick				Terra, Pacovan	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
45.	Fruit: color of skin (before maturity)					
(*)						
PQ	(d) green				São Tomé	1
	greenish yellow				Cavendish	2
	light yellow				Silk (Maçã)	3
	medium yellow				Prata comum	4
	dark yellow				Sucrier (Ouro)	5
	red				Caru Roxa	6
	brown					7
46.	Fruit: color of skin (stage 6 for ripe fruit)					
(*)						
PQ	(d) green				São Tomé	1
	greenish yellow				Cavendish	2
	light yellow				Silk (Maçã)	3
	medium yellow				Prata comum	4
	dark yellow				Sucrier (Ouro)	5
	reddish				Caru Roxa	6
	brown					7
47.	Fruit detachment (stage 6 for ripe fruit)					
(*)						
QN	(d) low				Silk (Maçã)	3
	medium				Nanicao	5
	high				Sucrier (Ouro), Yangambi Km 5 (Caipira)	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
48.	Fruit: color of pulp (stage 6 for ripe fruit)					
PQ (d)	white				Silk (Maçã)	1
	dull white				Prata	2
	cream				Caru Roxa e Verde	3
	yellow				Nanicão	4
	orange				Terra	5
	pink				São Domingos	6
49.	Fruit: firmness of pulp (stage 6)					
QN (c)	soft				Grande Naine, Silk (Maçã)	1
	moderately soft				Prata, Pacovan	3
	firm				Terra	5
50.	Male bud: shape					
	(+)					
PQ	slim				Pisang Lilin	1
	lanceolate				Yangambi Km 5, Pacovan	2
	oval				Pisang Mas	3
	wide oval (elliptic)				Prata	4
	rounded					5
51.	Male bud: overlap of bracts					
	Brazil will prepare an illustration for 2006					
QN	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) Unless otherwise stated, all observations on the leaf should be made on the third leaf from the apex at 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 inflorescence and flower should be made at the time of full flowering.
- (d) All observations on the fruit should be made on the second hand, on a median standard fruit of the inner cluster.

8.2 Explanations for individual characteristics

Ad. 1: Level of ploidy

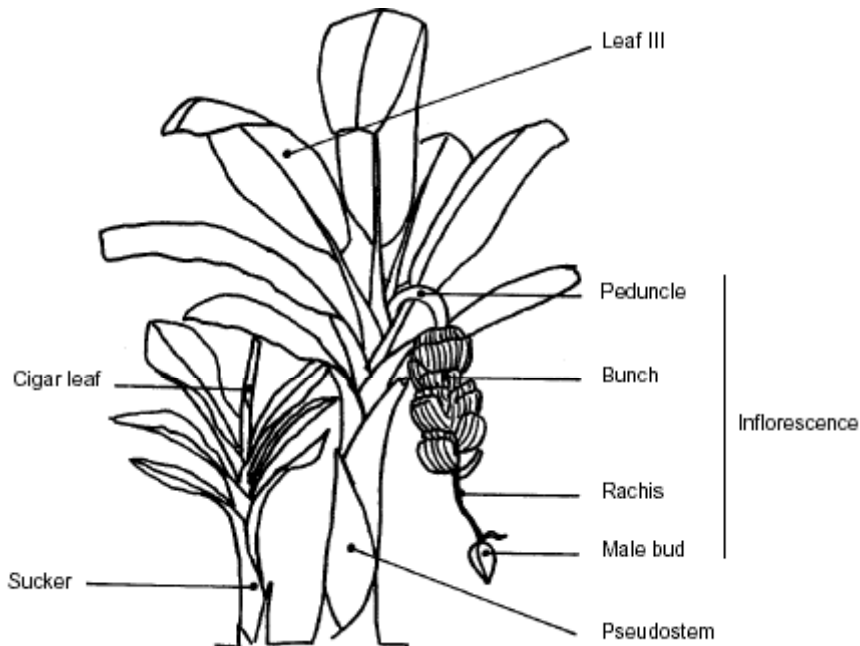
See ad.12 (illustration) and consider:

- 1 = diploid
- 2 = triploid
- 3 = tetraploid.

Ad. 2: Rhizome: number of suckers

Ad. 3: Pseudostem: length

Ad. 4: Pseudostem: diameter



Ad. 2: Rhizome: number of suckers

Assessed from the beginning of the suckers emission until harvest.

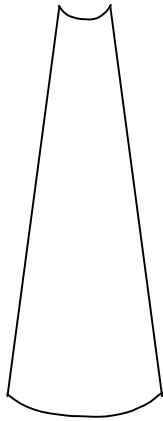
Ad. 3: Pseudostem: length

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

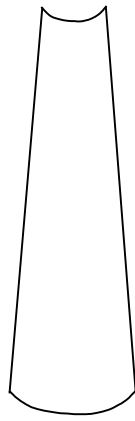
Ad. 4: Pseudostem: diameter

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

Ad. 5: Pseudostem: shape



1
conical



2
conical to cylindrical



3
cylindrical

Ad. 6: Pseudostem: color

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

Ad. 7: Pseudostem: spots



1
absent



9
present

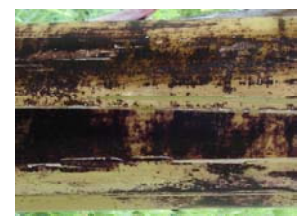
Ad. 8: Pseudostem: color of spots

1
pink purple

2
red



3
medium purple



4
dark purple

Ad. 9: Pseudostem: intensity of spots



3
low



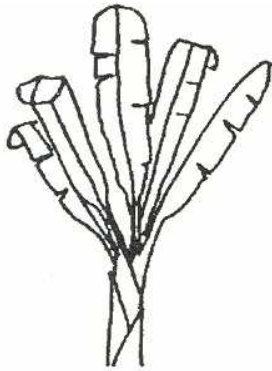
5
medium



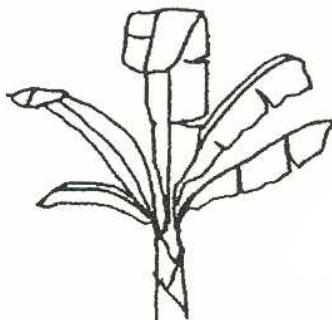
7
high

Ad. 12: Leaf: attitude

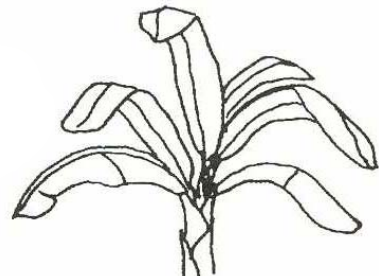
The leaf attitude should be observed at harvest time, at the moment of inflorescence emerging of those fruit bunches which were originally marked for observation.



1
upright

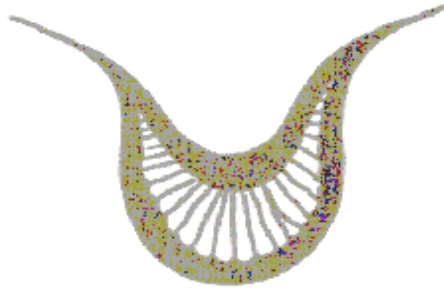


2
spreading



3
drooping

Ad. 13: Leaf: base of petiole



1
spreading



2
erect



3
slightly curved inward



4
curved inward

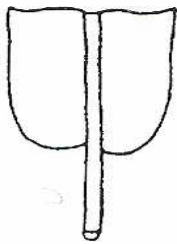


5
overlapping

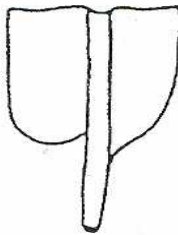
Ad. 14: Leaf: length of petiole

Measured from the pseudostem to the base of the leaf blade.

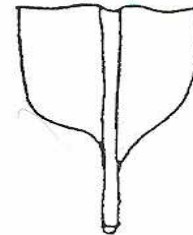
Ad. 16: Leaf : shape of the blade base



1
both sides rounded



2
one rounded and one pointed



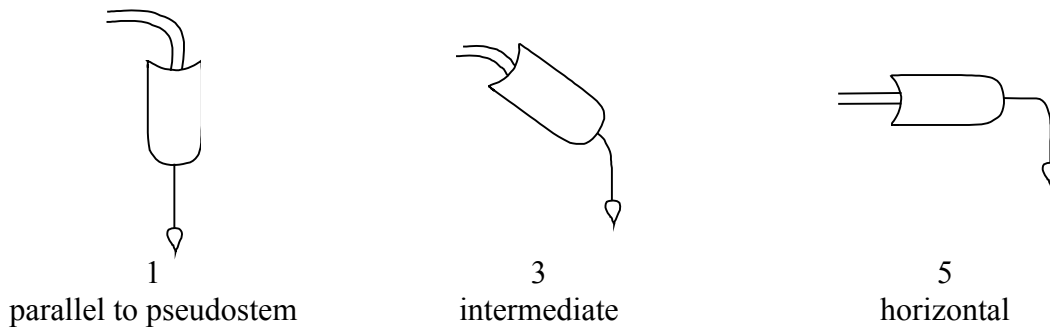
3
both sides pointed

Ad. 24: Peduncle: length

The length of the peduncle should be determined from the attachment point of the bunch to the first hand.

Ad. 25: Peduncle: diameter

The diameter of the peduncle should be assessed in the middle point between the attachment point of the bunch and the first hand.



Ad. 26: Peduncle: pilosity

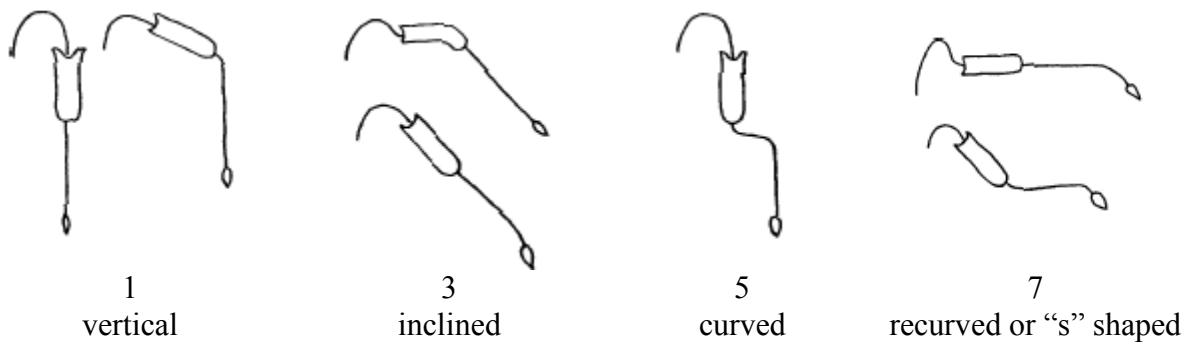


Ad. 28: Bunch: length

The length of the bunch should be measured from the attachment point of the first hand to the last hand.

Ad. 34: Bunch: attitude of the rachis

Assessed just before harvest time.



Ad. 39: Fruit: shape in cross section



1
rounded



2
slightly ridged



3
pronounced ridge

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.

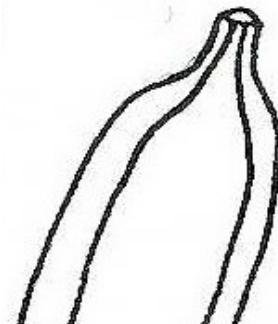
Ad. 43: Fruit: shape of apex.



1
rounded



2
pointed



3
bottle-neck

Ad. 50: Male bud: shape



1
slim



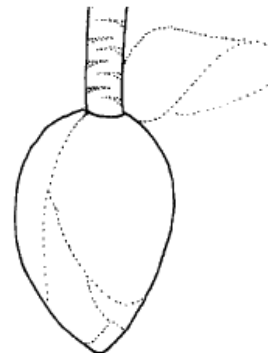
2
lanceolate



3
oval



4
wide oval (elliptic)



5
rounded

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

Silva, S.S.; Shepherd, K.; Dantas, J.L.L.; Souza, A.S.; Carneiro, M.S. Germoplasma. In: Alves, E.J. (org.). A cultura da banana. 2. ed., rev. - Brasília-DF: Embrapa-SPI / Cruz das Almas: Embrapa-CNPMF, 1999. p.61-84.

Descriptors for Banana [*Musa spp*](revised). IBPGR/ICRISAT, Rome, 1984.

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		
1.1.1 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.
(M. acuminata Colla × M. balbisiana Colla)"/>	<input type="checkbox"/>
1.2.2 Botanical group (please complete e.g. AAB, ABB)	<input type="text"/>	
2. Applicant		
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"/>	
3. Proposed denomination and breeder's reference		
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
TO ADD CHARACTERISTICS		

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 similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
<i>Example</i>		<i>(example to be inserted)</i>	<i>(example to be inserted)</i>

TO ADD EXAMPLES

Comments:

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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.

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

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

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

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

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

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

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

.....

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

Applicant's name:

Signature

Date:

[End of document]