

**E**



**TWV/48/30**

**ORIGINAL:** English

**DATE:** May 21, 2014

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

Geneva

**TECHNICAL WORKING PARTY FOR VEGETABLES**

**Forty-Eighth Session**

**Paestum, Italy, June 23 to 27, 2014**

COMMENTS CONCERNING THE DRAFT TEST GUIDELINES FOR BOTTLE GOURD, CALABASH  
(DOCUMENT TG/LAGEN(PROJ.3))

*Document prepared by an expert from France*

*Disclaimer: this document does not represent UPOV policies or guidance*

This document contains working draft with comments of document TG/LAGEN(proj.3).



TG/LAGEN(proj.3)  
ORIGINAL: English  
DATE: 2014-05-15

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS  
Geneva

DRAFT

**BOTTLE GOURD, CALABASH**

UPOV Code: LAGEN\_SIC

*Lagenaria siceraria* (Molina) Standl.

**GUIDELINES**

**FOR THE CONDUCT OF TESTS**

**FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

*prepared by experts from France*

*to be considered by the*

*Technical Working Party for Vegetables*

*at its forty-eighth session, to be held in Paestum, Italy, from June 23 to 27, 2014*

Alternative Names:

Botanical name	English	French	German	Spanish
<i>Lagenaria siceraria</i> (Molina) Standl., <i>Lagenaria siceraria</i> Standley, <i>Lagenaria vulgaris</i> Ser.	Bottle Gourd, Calabash, Calabash Gourd, White-flower Gourd	<b>Calebasse</b> , Gourde bouteille	Flaschenfrucht, Flaschenkürbis, Gewöhnlicher Flaschenkürbis	Acocote, Cajombre, Calabaza, Guiro amargo

**Comment [GEVES1]:** To check the German alternative name

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.

Other associated UPOV 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 .....	4
2. MATERIAL REQUIRED .....	4
3. METHOD OF EXAMINATION .....	4
3.1 Number of Growing Cycles .....	4
3.2 Testing Place .....	4
3.3 Conditions for Conducting the Examination .....	4
3.4 Test Design .....	4
3.5 Additional Tests .....	4
4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY .....	5
4.1 Distinctness .....	5
4.2 Uniformity .....	6
4.3 Stability .....	6
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL .....	6
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS .....	7
6.1 Categories of Characteristics .....	7
6.2 States of Expression and Corresponding Notes .....	7
6.3 Types of Expression .....	8
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 .....	14
8.1 Explanations covering several characteristics .....	14
8.2 Explanations for individual characteristics .....	14
9. LITERATURE .....	20
10. TECHNICAL QUESTIONNAIRE .....	21

## 1. SUBJECT OF THESE TEST GUIDELINES

These Test Guidelines apply to all varieties of *Lagenaria siceraria* (Molina) Standl..

## 2. MATERIAL REQUIRED

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of seeds.

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

200g – 1,500 seeds.

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

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

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

## 3. METHOD OF EXAMINATION

### 3.1 *Number of Growing Cycles*

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*

The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

### 3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 20 plants, which should be divided between at least 2 replicates.

3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

### 3.5 *Additional Tests*

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

#### 4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY

##### 4.1 *Distinctness*

###### 4.1.1 *General Recommendations*

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

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

###### 4.1.2 *Consistent Differences*

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

###### 4.1.3 *Clear Differences*

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

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

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 10 plants or parts taken from each of 10 plants and any other observations made on all plants in the test, disregarding any off-type 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 The assessment of uniformity for cross-pollinated varieties should be according to the recommendations for cross-pollinated varieties in the General Introduction.

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

4.2.4 The uniformity of a variety may be determined on the basis of off-types for some characteristics and standard deviations for other characteristics.

It can be assessed by considering the overall of variation, observed across all the individual plants, to determine whether it is similar to comparable varieties. In this approach, relative tolerance limits for the level of variation are set by comparison with comparable varieties, or types, already known ("standard deviations approach"). The standard deviations approach means that a candidate variety should not be significantly less uniform than the comparable varieties.

**For the assessment of uniformity of open-pollinated varieties, relative uniformity standards should be used.**

For the assessment of uniformity by counting of the number of off-types, a population standard of 2 % for cross-pollinated varieties and of 1 % for hybrid varieties with an acceptance probability of at least 95 % should be applied. In the case of a sample size of 20 plants, the maximum number of off-types allowed would be 1 for hybrid varieties whereas for cross-pollinated varieties it would be 2.

#### 4.3 Stability

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

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

### 5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL

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

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

5.3 The following have been agreed as useful grouping characteristics:

- a) Fruit: shape in longitudinal section ( characteristic 11)
- b) Fruit: length (characteristic 12)
- c) Fruit: diameter (characteristic 13)
- d) Fruit: presence of neck (characteristic 14)
- e) Fruit: length of neck in relation to the total length of the fruit (characteristic 16)
- f) Fruit: texture of skin (characteristic 21)

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

## 6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS

### 6.1 *Categories of Characteristics*

#### 6.1.1 *Standard Test Guidelines Characteristics*

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

#### 6.1.2 *Asterisked Characteristics*

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

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

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

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

State	Note
small	3
medium	5
large	7

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

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

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

### 6.3 *Types of Expression*

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

### 6.4 *Example Varieties*

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

### 6.5 *Legend*

- (\*) Asterisked characteristic – see Chapter 6.1.2
- QL Qualitative characteristic – see Chapter 6.3
- QN Quantitative characteristic – see Chapter 6.3
- PQ Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS – see Chapter 4.1.5

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

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



7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES

	English	Français	Deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
<b>1.</b>	<b>VG/ MS</b>	<b>Seedling: size of cotyledons</b>				
QN		small			Renshi	1
		medium			Shimotsukeshiro	2
		large			Omarukanpyo	3
<b>2.</b>	<b>VG/ MG (+)</b>	<b>Plant: length of main stem</b>				
QN	(a)	short			Koganeizairai	3
		medium			Shimotsukeshiro	5
		long			Aodainaga	7
<b>3.</b>	<del>MS</del> / VG	<b>Leaf blade: size</b>				<b>Comment [CJ3]:</b> KR; to delete MS and propose only VG assessment
QN	(a)	small			Koganeizairai	3
		medium			Shimotsukeshiro	5
		large			Sakigake	7
<b>4.</b>	VG	<b>Leaf blade: intensity of green color</b>				
QN	(a)	light			Indo	3
		medium			Shimotsukeshiro	5
		dark			Don-K	7
<b>5.</b>	VG (+)	<b>Leaf blade: degree of lobing</b>				
QN	(a)	absent or weak			Gigantesque	1
		weak medium			Pélerine	2
		medium strong			Tarahumara Canteen 3	3
<b>6.</b>	<del>MS</del> / VG	<b>Male flower: diameter of corolla</b>				<b>Comment [CJ5]:</b> KR: VG assessment is more relevant
QN	(b)	small			Mini Bottle	3
		medium			Shimotsukeshiro	5
		large			Massue Comestible	7
<b>7.</b>	VG (+)	<b>Male flower: overlapping of petals</b>				
QN	(b)	free			Canon Ball, Missionaris	1
		touching to slightly overlapping			Bouteille	2
		strongly overlapping			FR Strong, Massue Comestible	3
<b>8.</b>	<del>MS</del> / VG	<b>Female flower: diameter of corolla</b>				<b>Comment [CJ6]:</b> KR: VG assessment is more relevant
QN	(b)	small			Bouteille, Missionaris	3

	English	Français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
	medium				Basket Ball Brasil, Shimotsukeshiro	5
	large				Massue Comestible	7
<b>9.</b> <b>NEW</b> <b>(UA-2)</b> <b>(+)</b>	<b>VG</b>	<b>Female flower:</b> <b>overlapping of petals</b>				
<b>QN</b>	<b>(b)</b>	free			Canon Ball, Missionaris	1
		touching to slightly overlapping			Basket Ball Brasil	2
		strongly overlapping			Massue Comestible	3
<b>10.</b> <b>(+)</b>	<b>VG</b>	<b>Young fruit: bitterness</b>				
<b>QL</b>		absent			Shimotsukeshiro	1
		present			in present	9
<b>11.</b> <b>(*)</b> <b>(+)</b>	<b>VG</b>	<b>Fruit: shape in longitudinal section</b>				
<b>PQ</b>	<b>(c)</b>	oblate	arrondie aplatie		Plate de Corse	1
		circular	circulaire		Canon Ball	2
		pyriform	en poire		Tarahumara canteen	3
		clavate	en massue		Mayo Giant Bule	4
		dipper shape	en forme de louche		Dipper Short Handled Mottled	5
		gooseneck shape	en col de cygne		Kroocheck fr	6
		rattle shape	en hochet		Medium Thai Bottle fr	7
		cylindrical	cylindrique		Massue Comestible	8
<b>12.</b> <b>(*)</b> <b>(+)</b>	<b>MS/ VG</b>	<b>Fruit: length</b>				
<b>QN</b>	<b>(c)</b>	very short			Canon Ball	1
		short			Basket Ball Brasil	3
		medium			Mayo Giant Bule	5
		long			Zucca	7
		very long			Snake Speckled	9
<b>13.</b> <b>(*)</b> <b>(+)</b>	<b>MS/ VG</b>	<b>Fruit: diameter</b>				
<b>QN</b>	<b>(c)</b>	very small			Mini Nigerian	1
		small			Massue Comestible	3
		medium			Strawberry	5
		large			Bule Mayo	7
		very large			Gigantesque	9

**Comment [CJ7]:** ISF doesn't test  
bitterness

	English	Français	Deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
14.	VG	Fruit: presence of neck	To DELETE			
(*) (+)						
QN	(c)	absent or very-weak			Plate de Corse, Strawberry	1
		weak			Figue	3
		medium			Poire striée 4inch.	5
		strong			to-provide	7
		very strong			to-provide	9
14.	VG	Fruit: presence of neck				
(*) (+)		absent			Figue, Mayo Giant Bule, Strawberry, Plate de Corse, Massue Comestible.	1
		present			Medium Thai Bottle fr, Kroocheck fr, Dipper Short Handled Mottled	9
15.	VG	Fruit: shape of neck				
(*) (+)						
PQ	(c)	globose			Medium Thai Bottle fr	1
		fusiform			Mayo gooseneck	2
		cylindrical			Dipper Short Handled Mottled, Lagenaria 12 A	3
16.	MS/ VG	Fruit: length of neck in relation to the total length of the fruit				
(*) (+)						
QN	(c)	very short			Missionaris	1
		short			Medium Thai Bottle	3
		medium			Long Handled Dipper	5
		long			Duck Australie fr	7
		very long			Extra Long Dipper	9
17.	MS/ VG	Fruit: diameter of neck in relation to the diameter of the base				
(*) (+)						
QN	(c)	narrow			Dipper Short Handled Mottled	3
		medium			Froggy	5
		broad			Gigantesque	7

**Comment [CJ8]:** UA proposal: Qualitative characteristic: 1 absent / 9 present

**Comment [CJ9]:** UA proposal: Qualitative characteristic: 1 absent / 9 present

**Comment [CJ10]:** UA comment: to replace the range "very low" to "very high" (scale which corresponds to a ratio) by the range "very short" to "very long" which is more suitable for a length.

	English	Français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
<b>NEW (FR-1)</b>  <b>(+)</b>	<b>Fruit: ribbing of the neck</b>						
	absent				Figue, Pélerine	1	
	present				Massue Comestible	9	
<b>18.</b>  <b>(+)</b>	<b>VG</b>	<b>Fruit: intensity of main color</b>					
<b>QN</b>	<b>(c)</b>	very light			Bianca, Shimotsukeshiro	1	
		light			Pélerine, Plate de Corse	3	
		medium			Basket Ball Brasil, Canon Ball	5	
		dark			Kroocheck fr	7	
		very dark			Marenka	9	
<b>19.</b>  <b>(*)</b> <b>(+)</b>	<b>VG</b>	<b>Fruit: number of speckles</b>					
<b>QN</b>	<b>(c)</b>	absent or very few			Marenka Limegreen, Shimotsukeshiro	1	
		few			Basket Ball Brasil	3	
		medium			Drague	5	
		many			Froggy	7	
<b>20.</b> <b>NEW (NL-1)</b>	<b>VG</b>	<b>Fruit: size of speckles</b>					
<b>QN</b>	<b>(c)</b>	small			Basket Ball Brasil	3	
		medium			Chata P. Alegre	5	
		large			Kroocheck fr	7	
<b>21.</b>  <b>(*)</b> <b>(+)</b>	<b>VG</b>	<b>Fruit: Texture of skin</b>					
<b>PQ</b>	<b>(c)</b>	smooth			Kroocheck fr	1	
		slightly verrucose			Bule Mayo	2	
		moderately verrucose			Warty Australia fr	3	
		highly verrucose			Verruqueuse Africaine	4	
		slightly corrugated			Tol Fravago	5	
		moderately corrugated			Marenka Limegreen	6	
		highly corrugated			Marenka	7	
<b>*** NEW (FR)</b>  <b>(+)</b>	<b>Fruit: pistil scar</b>						
	small				Pélerine	3	
	medium				Massue Comestible	5	
	large				NKombo fr	7	

**Comment [CJ11]:** KR comment: to replace "MAIN color" by "GREEN color" because there is only one color.

FR: "MAIN color" is associated to the hue which is the more widely spread.

	English	Français	Deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
22.	MS/ VG	Seed: <b>width</b>				
(+)						
QN	(d)	<b>narrow</b>			Mayo Gooseneck, Suisukanpyo	3
		medium			Mayo Giant Bule, Shimotsukeshiro	5
		<b>broad</b>			Nkombo fr, Omarukanpyo	7
23.	VG	Seed: <b>color</b>				
PQ	(d)	light brown			Lagenaria 12A	1
		dark brown			<b>Canon Ball, Nkombo fr</b> Shimotsukeshiro	2
		black			<b>Bule Mayo</b>	3

8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS

8.1 Explanations covering several characteristics

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




- (a) Observations should be made on fully developed leaves, at beginning of flowering.
- (b) Observations should be made on flowers at full flowering.
- (c) Observations should be made on fruits at physiological maturity.
- (d) Observations should be made on fully developed dry seeds, after washing and drying in the shade.

8.2 Explanations for individual characteristics




Ad. 2: Plant: Length of the main stem

Plants tend to develop many branches. The length of the main stem is correlated to the volume of the plant, the surface covered by the plant in the field, the growth speed of the stems after the beginning of flowering -8.1 (b) stage. This characteristic could be assessed by relative comparisons between varieties. When plants are regularly spaced (planting space suggested 1.80m), it is possible to identify a variety which grows fastest than another.




Ad.5: Leaf blade: degree of lobing

		
<u>Gigantesque</u>	<u>Pélerine</u>	<u>Tarahumara Canteen 3</u>
<b>1</b>	<b>2</b>	<b>3</b>
absent or weak	medium weak	strong medium

Ad. 7 : Male flower: overlapping of petals

		
<u>Missionaris</u>	<u>Bouteille</u>	<u>Massue Comestible</u>
1	2	3
free	touching to slightly overlapping	strongly overlapping





Ad. 9 ~~NEW (UA-2)~~: Female flower: **overlapping of petals**





		
Missionaris	Basket Ball Brasil	Massue Comestible
1	2	3
Free	touching to slightly overlapping	strongly overlapping

Ad.10: Young fruit: bitterness

The bitterness of the young fruit should be observed by tasting **two weeks after flowering**. **Not to eat, the bitter fruits can be toxic.**

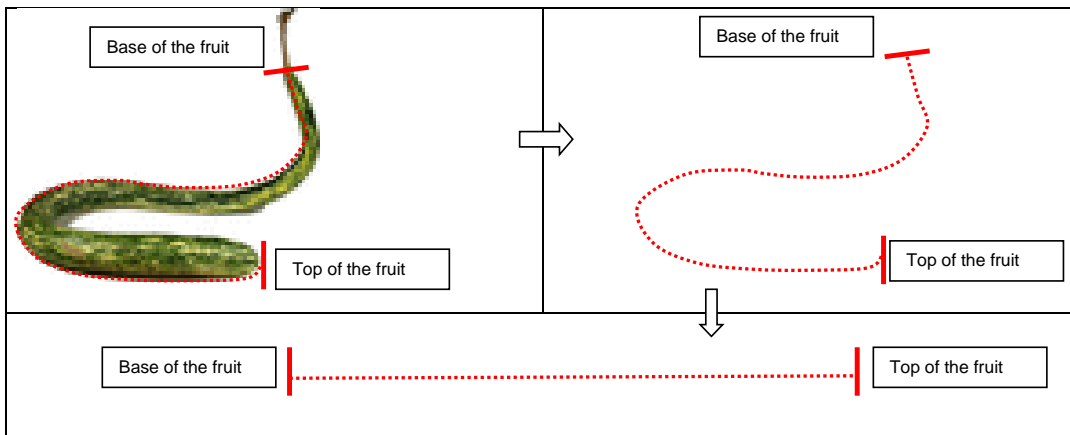
Ad. **11**: Fruit: shape in longitudinal section

			
Plate de Corse	Canon Ball	Tarhumara Canteen 3	Mayo Giant Bule
1	2	3	4
oblate	circular	pyriform	<b>clavate</b>

			
Dipper Short Handled Mottled	<b>Kroocheck fr</b>	Medium Thai Bottle fr	Massue Comestible
<b>5</b>	<b>6</b>	<b>7</b>	8
<b>dipper shape</b>	<b>gooseneck shape</b>	<b>rattle shape</b>	cylindrical


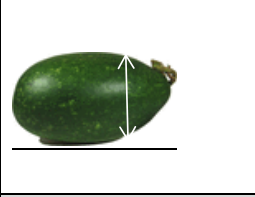
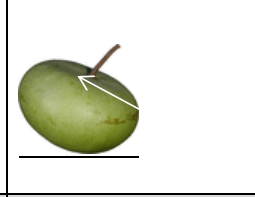
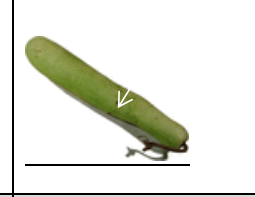
Ad. **12** Fruit: length

This assessment is based on the **developed length** of the fruit, **at the time of full development of the fruit.**

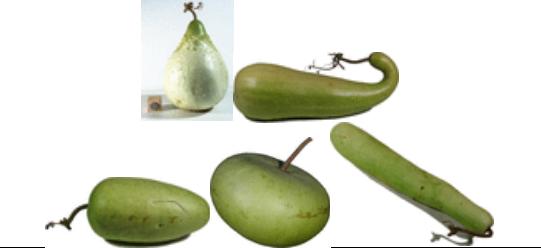
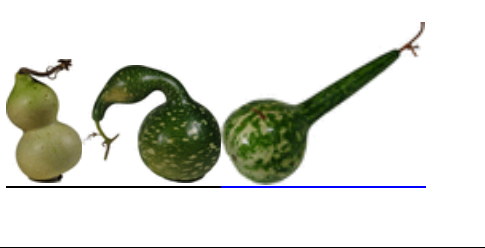


Ad. 13: Fruit: diameter

This assessment is based on the **widest part** of the fruit, **at the time of full development of the fruit.**

			
Gigantesque	Basket Ball Brasil	Plate de Corse	Massue Comestible

Ad. 14: Fruit: presence of neck

	
Figue / Mayo Giant Bule/ Strawberry / Plate de Corse / Massue Comestible/	Medium Thai Bottle fr / Kroochneck fr / Dipper Short Handled Mottled
1	9
absent	present

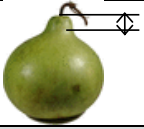

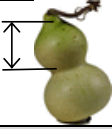
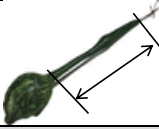
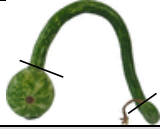
Ad. 15: Fruit: shape of neck



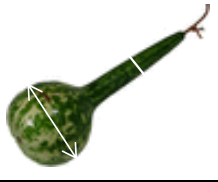
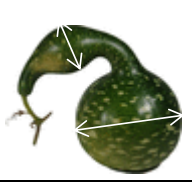



Medium Thai Bottle fr	Mayo gooseneck // Kroocheck fr	Lagenaria 12 A
1	2	3
globose	fusiform	cylindrical


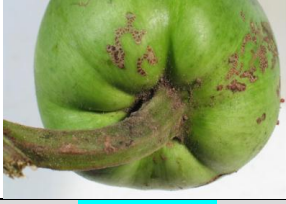
Ad. 16: Fruit: length of neck in relation to the total length of the fruit

				
Missionaris	Mini Nigerian	Medium Thai Bottle	Duck Australie fr	Extra Long Dipper
1	3	5	7	9
very short	short	medium	long	very long






Ad. 17: Only necked varieties: Fruit: diameter of neck in relation to the diameter of the base

		
neck diameter < 1/2 fruit diameter	neck diameter = 1/2 fruit diameter	neck diameter > 1/2 fruit diameter
Dipper Short Handled Mottled	Kroocheck fr	Gigantesque
3	5	7
small	medium	large

Ad. NEW (FR-1): Fruit: ribbing of the neck





	
Figue	Massue Comestible
1	9
absent	present

Ad. 18: Fruit: intensity of main color




				
<u>Bianca</u>	<u>Plate de Corse</u>	<u>Canon Ball</u>	<u>Kroocheck fr</u>	<u>Marenka</u>
1	3	5	7	9
very light	light	medium	dark	very dark

The main color is the color with the largest surface.





Ad. 19: Fruit: number of speckles

			
<u>Marenka Limegreen</u>	<u>Basket Ball Brasil</u>	<u>Drague</u>	<u>Froggy</u>
1	3	5	7
<u>absent or very few</u>	few	medium	many




Ad. 20 NEW (NL-1): Fruit: size of speckles

		
<u>Basket Ball Brasil</u>	<u>Chata P. Alegre</u>	<u>Froggy</u>
3	5	7
small	medium	large




Ad. 21: Fruit: texture of skin

			
<u>Kroocheck fr</u>	<u>Bule Mayo</u>	<u>Worthy Australia fr</u>	<u>Verruqueuse Africaine</u>
1	2	3	4




smooth	slightly verrucose	moderately verrucose	highly verrucose
--------	--------------------	----------------------	------------------

		
Tol Fravago	Marenka Limegreen	Marenka
5	6	7
slightly corrugated	moderately corrugated	highly corrugated

**Ad. NEW (FR-2): Fruit: pistil scar**

		
Pélerine	Massue Comestible	NKombo fr
3	5	7
small	medium	large

**Ad.22 : Seed: width**

		
Mayo Gooseneck	Mayo Giant Bule	Nkombo fr
3	5	7
narrow	medium	broad

9. LITERATURE

<http://cucurbitophile.fr/esp/051/esp.php>

<http://www.ars-grin.gov/~sbmljw/cgi-bin/taxon.pl?21385>

<http://plants.usda.gov/java/profile?symbol=LASI>

<http://www.prota4u.org/protav8.asp?h=M4&t=lagenaria,siceraria&p=Lagenaria+siceraria#Synonyms>

Ho CH, Ho MG, Ho SP, Ho HH., 2013. Bitter Bottle Gourd (*Lagenaria siceraria*) Toxicity, *J Emerg Med.* 2013.08.106.

<http://www.ncbi.nlm.nih.gov/pubmed/24360122>

Darekar, K.S., Mhase, N.L. & Shelke, S.S., 1989. Effect of nematicidal seed treatment on root knot nematode and yield of bottle-gourd. *International Nematology Network Newsletter* 6(1): 14–16.

Decker-Walters, D., Staub, J., López-Sesé, A. & Nakata, E., 2001. Diversity in landraces and cultivars of bottle gourd (*Lagenaria siceraria*: Cucurbitaceae) as assessed by random amplified polymorphic DNA. *Genetic Resources and Crop Evolution* 48: 369–380.

Heiser, C.B., 1979. *The gourd book*. University of Oklahoma Press, Norman, United States. 248 pp.

Ho CH, Ho MG, Ho SP, Ho HH., 2013. Bitter Bottle Gourd (*Lagenaria siceraria*) Toxicity, *J Emerg Med.* 2013.08.106. <http://www.ncbi.nlm.nih.gov/pubmed/24360122>

Jeffrey, C., 1967. Cucurbitaceae. In: Milne-Redhead, E. & Polhill, R.M. (Editors). *Flora of Tropical East Africa*. Crown Agents for Oversea Governments and Administrations, London, United Kingdom. 157 pp.

Maundu, P.M., Ngugi, G.W. & Kabuye, C.H.S., 1999. *Traditional food plants of Kenya*. Kenya Resource Centre for Indigenous Knowledge (KENRIK), Nairobi, Kenya. 270 pp.

Morimoto, Y. & Mvere, B., 2004. *Lagenaria siceraria* (Molina) Standl. [Internet] Record from Protabase. Grubben, G.J.H. & Denton, O.A. (Editors). PROTA (Plant Resources of Tropical Africa / Ressources végétales de l'Afrique tropicale), Wageningen, Netherlands. <<http://database.prota.org/search.htm>>.

Richardson, J.B., 1972. The pre-Columbian distribution of the bottle gourd (*Lagenaria siceraria*): a re-evaluation. *Economic Botany* 26: 265–273.

Schippers, R.R., 2002. *African indigenous vegetables, an overview of the cultivated species 2002*. Revised edition on CD-ROM. National Resources International Limited, Aylesford, United Kingdom.

Shah, B.N., Seth, A.K., Desai, R.V., 2010. Phytopharmacological Profile of *Lagenaria siceraria*: A Review. *Asian Journal of Plant Sciences* 9 (3), pp.152 to pp.157.

Widjaja, E.A. & Reyes, M.E.C., 1993. *Lagenaria siceraria* (Molina) Standley. In: Siemonsma, J.S. & Kasem Piluek (Editors). *Plant Resources of South-East Asia No 8. Vegetables*. Pudoc Scientific Publishers, Wageningen, Netherlands. pp. 190–192.

10. TECHNICAL QUESTIONNAIRE

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights		
1. Subject of the Technical Questionnaire		
1.1 Botanical name	<input type="text" value="Lagenaria siceraria (Molina) Standl."/>	
1.2 Common name	<input type="text" value="Bottle Gourd, Calabash"/>	
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:
-------------------------	-----------------	-------------------

4. Information on the breeding scheme and propagation of the variety

**4.1 Breeding scheme**

Variety resulting from:

4.1.1 Crossing [ ]

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**

4.2.1 Seed propagated varieties

(a) Self-pollination [ ]

(b) Cross-pollination [ ]  
(i) population [ ]  
(ii) synthetic variety [ ]

(c) Hybrid [ ]  
(i) single hybrid [ ]  
(ii) three-way hybrid [ ]

(d) Other [ ]  
(please provide details)

[ ]

4.2.2 Other [ ]  
(please provide details)

[ ]

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

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).			
Characteristics		Example Varieties	Note
<b>5.1</b> <b>(11)</b>	<b>Fruit: shape in longitudinal section</b>		
	oblate	Plate de Corse	1 [ ]
	circular	Canon Ball	2 [ ]
	pyriform	Tarahumara Canteen 3	3 [ ]
	clavate	Mayo Giant Bule	4 [ ]
	dipper shape	Dipper Short Handled Mottled	5 [ ]
	gooseneck shape	Kroochneck fr	6 [ ]
	rattle shape	Medium Thai Bottle fr	7 [ ]
	cylindrical	Massue Comestible	6 [ ]
<b>5.2</b> <b>(12)</b>	<b>Fruit: length</b>		
	very short	Canon Ball	1 [ ]
	short	Basket Ball Brasil	3 [ ]
	medium	Mayo Giant Bule	5 [ ]
	long	Zucca	7 [ ]
	very long	Snake Speckled	9 [ ]
<b>5.3</b> <b>(13)</b>	<b>Fruit: diameter</b>		
	very small	Mini Nigerian	1 [ ]
	small	Massue Comestible	3 [ ]
	medium	Strawberry	5 [ ]
	large	Bule Mayo	7 [ ]
	very large	Gigantesque	9 [ ]
<b>5.4</b> <b>(14)</b>	<b>Fruit: presence of neck</b>		
	absent	Figue, Massue Comestible, Mayo Giant Bule, Plate de Corse, Strawberry	1 [ ]
	present	Medium Thai Bottle fr, Kroochneck fr, Dipper Short Handled Mottled	9 [ ]

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

Characteristics	Example Varieties	Note
<b>5.5</b> <b>(16)</b> Fruit: <b>length of neck in relation to the total length of the fruit</b>		
very <b>low</b>	Missionaris	1 [ ]
<b>low</b>	<b>Medium Thai Bottle</b>	3 [ ]
medium	Long Handled Dipper	5 [ ]
<b>high</b>	Duck Australie fr	7 [ ]
very <b>high</b>	Extra Long Dipper	9 [ ]
<b>5.6</b> <b>(19)</b> Fruit: <b>number of speckles</b>		
<b>absent or very few</b>	<b>Marenka Limegreen, Shimotsukeshiro</b>	<b>1 [ ]</b>
<b>few</b>	<b>Basket Ball Brasil</b>	<b>3 [ ]</b>
<b>medium</b>	Drague	<b>5 [ ]</b>
<b>many</b>	Froggy	<b>7 [ ]</b>
<b>5.7</b> <b>(21)</b> Fruit: <b>texture of skin</b>		
smooth	Kroochneck fr	1 [ ]
<b>slightly verrucose</b>	<b>Bule Mayo</b>	2 [ ]
<b>moderately verrucose</b>	Warthy Australia fr	
<b>highly verrucose</b>	Verruqueuse Africaine	
<b>slightly corrugated</b>	<b>Tol Fravago</b>	
<b>moderately corrugated</b>	<b>Marenka Limegreen</b>	
<b>highly corrugated</b>	Marenka	



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

**6. Similar varieties and differences from these varieties**

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

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the <b>similar</b> variety(ies)	Describe the expression of the characteristic(s) for <b>your</b> candidate variety
<i>Example</i>	<i>Fruit: number of speckles</i>	<i>few</i>	<i>medium</i>

Comments:

**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

Variety use

(a) vegetable

(b) rootstock   
(please provide details)

(c) other   
(please provide details)

A representative **color image** of the fruit at full development should accompany the Technical Questionnaire.

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

**8. Authorization for release**

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

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

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

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

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

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

.....

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

Applicant's name

Signature  Date

[End of the document]