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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*
Lagenaria siceraria (Molina) Standl., *Lagenaria siceraria* Standley, *Lagenaria vulgaris* Ser.	Bottle Gourd, Calabash, Calabash Gourd, White-flower Gourd	Calebasse, Gourde bouteille	Flaschenfrucht, Flaschenkürbis, Gewöhnlicher Flaschenkürbis	Acocote, Cajombre, Calabaza, Guiro amargo

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.]

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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 Beispielssorten Variedades ejemplo	Note/ Nota
1.	**VG/ MS**	**Seedling: size of cotyledons**					
QN		small				Renshi	1
		medium				Shimotsukeshiro	2
		large				Omarukanpyo	3
2. **(+)**	**VG/ MG**	**Plant: length of main stem**					
QN	**(a)**	short				Koganeizairai	3
		medium				Shimotsukeshiro	5
		long				Aodainaga	7
3.	**VG**	**Leaf blade: size**					
QN	**(a)**	small				Koganeizairai	3
		medium				Shimotsukeshiro	5
		large				Sakigake	7
4.	**VG**	**Leaf blade: intensity of green color**					
QN	**(a)**	light				Indo	3
		medium				Shimotsukeshiro	5
		dark				Don-K	7
5. **(+)**	**VG**	**Leaf blade: degree of lobing**					
QN	**(a)**	absent				Gigantesque	1
		weak				Pélerine	2
		medium				Tarahumara Canteen 3	3
6.	**VG**	**Male flower: diameter of corolla**					
QN	**(b)**	small				Mini Bottle	3
		medium				Shimotsukeshiro	5
		large				Massue Comestible	7
7. **(+)**	**VG**	**Male flower: overlapping of petals**					
QN	**(b)**	free				Canon Ball, Missionaris	1
		touching to slightly overlapping				Bouteille	2
		strongly overlapping				FR Strong, Massue Comestible	3

		English	Français	Deutsch	Español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8.	**VG**	**Female flower: diameter of corolla**					
QN	**(b)**	small				Bouteille, Missionaris	3
		medium				Basket Ball Brasil, Shimotsukeshiro	5
		large				Massue Comestible	7
9.	**VG**	**Female flower: overlapping of petals**					
(+)							
QN	**(b)**	free				Canon Ball, Missionaris	1
		touching to slightly overlapping				Basket Ball Brasil	2
		strongly overlapping				Massue Comestible	3
10.	**VG**	**Young fruit: bitterness**					
(+)							
QL		absent				Shimotsukeshiro	1
		present					9
11.	**VG**	**Fruit: shape in longitudinal section**					
(*)							
(+)							
PQ	**(c)**	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			Kroochneck fr	6
		rattle shape	en hochet			Medium Thai Bottle fr	7
		cylindrical	cylindrique			Massue Comestible	8
12.	**MS/ VG**	**Fruit: length**					
(*)							
(+)							
QN	**(c)**	very short				Canon Ball	1
		short				Basket Ball Brasil	3
		medium				Mayo Giant Bule	5
		long				Zucca	7
		very long				Snake Speckled	9

		English	Français	Deutsch	Español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13. (*) (+)	**MS/ VG**	**Fruit: diameter**					
QN	**(c)**	very small				Mini Nigerian	1
		small				Massue Comestible	3
		medium				Strawberry	5
		large				Bule Mayo	7
		very large				Gigantesque	9
14. (*) (+)	**VG**	**Fruit: presence of neck**					
		absent				Figue, Massue Comestible, Mayo Giant Bule, Plate de Corse, Strawberry	1
		present				Dipper Short Handled Mottled, Kroochneck fr, Medium Thai Bottle fr	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
*****. NEW (FR-1) (+)**		**Fruit: ribbing of the neck**					
		absent				Figue, Pélerine	1
		present				Massue Comestible	9

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

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

1
absent

2
weak

3
medium

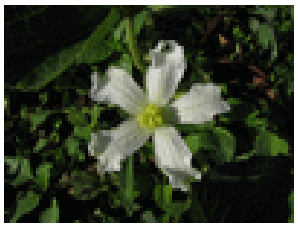
Ad. 7 : Male flower: overlapping of petals

1
free

2
touching to slightly overlapping

3
strongly overlapping

Ad. 9: Female flower: overlapping of petals



1
free

2
touching to slightly overlapping

3
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

1
oblate

2
circular

3
pyriform

4
clavate

5
dipper shape

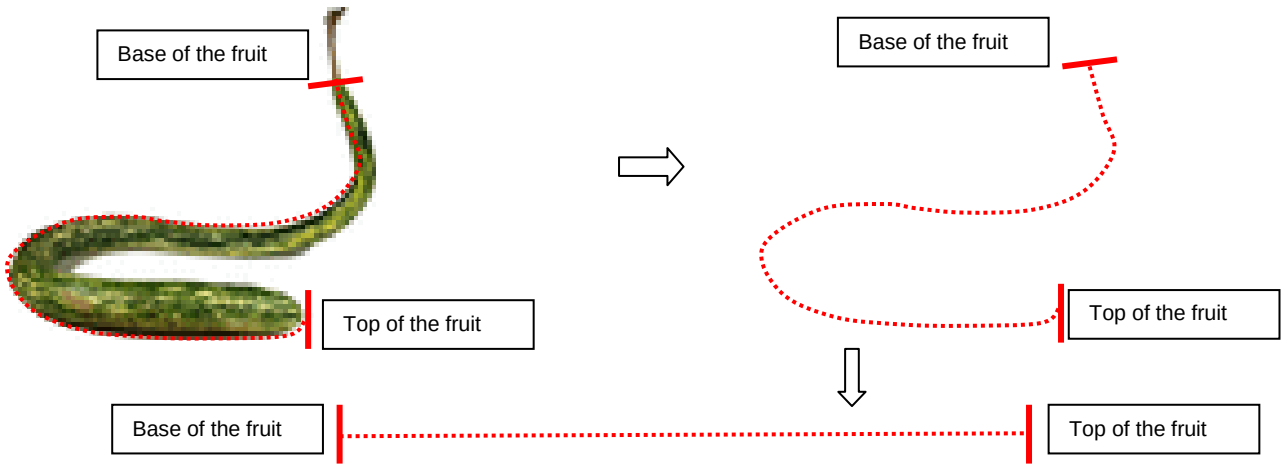
6
gooseneck shape

7
rattle shape

8
cylindrical

Ad. 12 Fruit: length

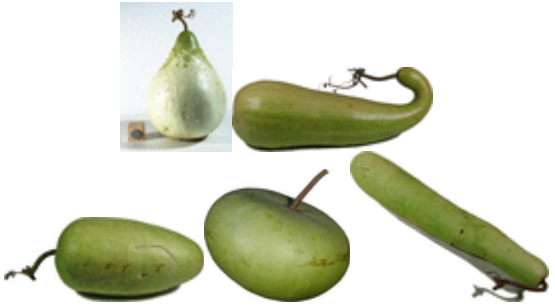
This assessment is based on the developed length of the fruit, at the time of full development of the fruit.



Ad. 13: Fruit: diameter

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

Ad. 14: Fruit: presence of neck



1
absent

9
present

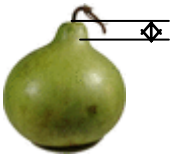
Ad. 15: Fruit: shape of neck

1
globose

2
fusiform

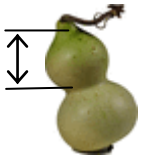
3
cylindrical

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

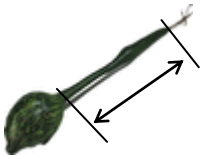


1
very short

3
short



5
medium

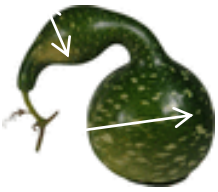


7
long

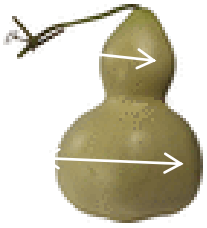
9
very long

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

neck diameter < ½ fruit diameter
3
narrow



neck diameter = ½ fruit diameter
5
medium



neck diameter > ½ fruit diameter
7
broad

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

1
absent

9
present

Ad. 18: Fruit: intensity of main color

1
very light

3
light

5
medium

7
dark

9
very dark

The main color is the color with the largest surface.

Ad. 19: Fruit: number of speckles

1
absent or very few

3
few

5
medium

7
many

Ad. 20: Fruit: size of speckles

3
small

5
medium

7
large

Ad. 21: Fruit: texture of skin

1
smooth

2
slightly verrucose

3
moderately verrucose

4
highly verrucose

5
slightly corrugated

6
moderately corrugated

7
highly corrugated

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

3
small

5
medium

7
large

Ad. 22: Seed: width

3
narrow

5
medium

7
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	*Lagenaria siceraria* (Molina) Standl.
1.2 Common name	Bottle Gourd, Calabash

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	
Breeder (if different from applicant)	

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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

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

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing [ ]

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
5.1 (11)	**Fruit: shape in longitudinal section**		
	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	8 [ ]
5.2 (12)	**Fruit: length**		
	very short	Canon Ball	1 [ ]
	very short to short		2 [ ]
	short	Basket Ball Brasil	3 [ ]
	short to medium		4 [ ]
	medium	Mayo Giant Bule	5 [ ]
	medium to long		6 [ ]
	long	Zucca	7 [ ]
	long to very long		8 [ ]
	very long	Snake Speckled	9 [ ]
5.3 (13)	**Fruit: diameter**		
	very small	Mini Nigerian	1 [ ]
	very small to small		2 [ ]
	small	Massue Comestible	3 [ ]
	small to medium		4 [ ]
	medium	Strawberry	5 [ ]
	medium to large		6 [ ]
	large	Bule Mayo	7 [ ]
	large to very large		8 [ ]
	very large	Gigantesque	9 [ ]

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

	Characteristics	Example Varieties	Note
5.4 (14)	**Fruit: presence of neck**		
	absent	Figue, Massue Comestible, Mayo Giant Bule, Plate de Corse, Strawberry	1 [ ]
	present	Dipper Short Handled Mottled, Kroochneck fr, Medium Thai Bottle fr	9 [ ]
5.5 (16)	**Fruit: length of neck in relation to the total length of the fruit**		
	very low	Missionaris	1 [ ]
	very low to low		2 [ ]
	low	Medium Thai Bottle	3 [ ]
	low to medium		4 [ ]
	medium	Long Handled Dipper	5 [ ]
	medium to high		6 [ ]
	high	Duck Australie fr	7 [ ]
	high to very high		8 [ ]
	very high	Extra Long Dipper	9 [ ]
5.6 (19)	**Fruit: number of speckles**		
	absent or very few	Marenka Limegreen, Shimotsukeshiro	1 [ ]
	very few to few		2 [ ]
	few	Basket Ball Brasil	3 [ ]
	few to medium		4 [ ]
	medium	Drague	5 [ ]
	medium to many		6 [ ]
	many	Froggy	7 [ ]
	many to very many		8 [ ]
	very many		9 [ ]

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

	Characteristics	Example Varieties	Note
5.7 (21)	**Fruit: texture of skin**		
	smooth	Kroochneck fr	1 [ ]
	slightly verrucose	Bule Mayo	2 [ ]
	moderately verrucose	Warthy Australia fr	3 [ ]
	hightly verrucose	Verruqueuse Africaine	4 [ ]
	slightly corrugated	Tol Fravago	5 [ ]
	moderately corrugated	Marenka Limegreen	6 [ ]
	hightly corrugated	Marenka	7 [ ]

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

6. Similar varieties and differences from these varieties

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

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

Comments:

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

[#]7. Additional information which may help in the examination of the variety

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

Yes [ ] No [ ]

(If yes, please provide details)

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

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.

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 the document]