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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

PEPINO *

UPOV Code(s): SOLAN_MUR

Solanum muricatum Aiton

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from Japan
to be considered by the
Enlarged Editorial Committee
at its meeting, to be held in Geneva
from 2018-03-26 to 2018-03-27

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Solanum muricatum Aiton, *Solanum muricatum* L'Hér. ex Ait.	Melon-pear, Pepino	Poire-melon	Melonenbirne, Pepino	Pepino, Pepino dulce, Peramelón

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 *Solanum muricatum* Aiton .

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 plants.

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

25 plants

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

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

3. Method of Examination

3.1 Number of Growing Cycles

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

3.2 Testing Place

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

3.3 Conditions for Conducting the Examination

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.

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 or 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 of plants 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 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 These Test Guidelines have been developed for the examination of vegetatively propagated varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.

4.2.3 For the assessment of uniformity of vegetatively propagated varieties, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 20 plants, 1 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 further examined by testing a new seed or plant 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) Leaf: type (characteristic 4)
(b) Fruit: ground color (characteristic 14)
(c) Fruit: area of stripes (characteristic 15)
(d) Fruit: shape in longitudinal section (characteristic 19)
(e) Fruit: color of flesh (characteristic 23)

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

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1	**2**	**3**	**4**	**5**	**6**	**7**			
		Name of characteristics in English		**Nom du caractère en français**		**Name des Merkmals auf Deutsch**	**Nombre del carácter en español**		
		states of expression		types d'expression		Ausprägungsstufen	tipos de expresión		

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression
QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)
MG, MS, VG, VS – see Chapter 4.1.5

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

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

7 Not applicable

7. Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	**(*)**	**QN MS/VG**	**(a)**				
		Plant: height	**Plante : hauteur**	**Pflanze: Höhe**	**Planta: altura**		
		short	basse	niedrig	baja		3
		medium	moyenne	mittel	media	Gold No.1	5
		tall	haute	hoch	alta	Monrou Dance	7
2.		**QN VG**	**(+) (a)**				
		Stem: anthocyanin coloration	**Tige : pigmentation anthocyanique**	**Stengel: Anthocyanfärbung**	**Tallo: pigmentación antociánica**		
		absent or weak	absente ou faible	fehlend oder gering	ausente o leve	Appulinmimi	1
		medium	moyenne	mittel	media	Gold No.1	2
		strong	forte	stark	intensa	Gold Boy	3
3.		**QN VG**	**(a)**				
		Stem: pubescence	**Tige : pubescence**	**Stengel: Behaarung**	**Tallo: pubescencia**		
		absent or sparse	absente ou lâche	fehlend oder locker	ausente o escasa		1
		medium	moyenne	mittel	media	Monrou Dance	2
		dense	dense	dicht	densa	Gold No.1	3
4.	**(*)**	**QL VG**	**(+) (a)**				
		Leaf: type	**Feuille : type**	**Blatt: Typ**	**Hoja: tipo**		
		simple	simple	einfach	simple	Gold No.1	1
		compound	composée	zusammengesetzt	compuesta	Helloevening	2
5.	**(*)**	**QN MS/VG**	**(+) (a)**				
		Leaf: length	**Feuille : longueur**	**Blatt: Länge**	**Hoja: longitud**		
		short	courte	kurz	corta		3
		medium	moyenne	mittel	media	Gold No.1	5
		long	longue	lang	larga	Appulinmimi	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6. (*) QN MS/VG		**(+) (a)**				
	Leaf: width	**Feuille : largeur**	**Blatt: Breite**	**Hoja: anchura**		
	narrow	étroite	schmal	estrecha		3
	medium	moyenne	mittel	media	Gold No.1	5
	broad	large	breit	ancha		7
7. QN VG		**(+) (a)**				
	Leaf: intensity of anthocyanin coloration of midrib	**Feuille : intensité de la pigmentation anthocyanique de la nervure médiane**	**Blatt: Intensität der Anthocyanfärbung der Mittelrippe**	**Hoja: intensidad de la pigmentación antociánica del nervio central**		
	absent or weak	absente ou faible	fehlend oder gering	ausente o leve	Monrou Dance	1
	medium	moyenne	mittel	media	Helloevening	2
	strong	forte	stark	intensa		3
8. (*) PQ VG		**(+) (a)**				
	Leaf blade: shape	**Limbe : forme**	**Blattspreite: Form**	**Limbo: forma**		
	broad lanceolate	lancéolé large	breit lanzettlich	lanceolado ancho	Gold No.1	1
	medium lanceolate	lancéolé moyen	mittel lanzettlich	lanceolado medio		2
	circular	circulaire	kreisförmig	circular		3
	elliptic	elliptique	elliptisch	elíptico	Gold Boy	4
9. QN VG		**(a)**				
	Leaf blade: intensity of green color	**Limbe : intensité de la couleur verte**	**Blattspreite: Intensität der Grünfärbung**	**Limbo: intensidad del color verde**		
	light	claire	hell	claro		1
	medium	moyenne	mittel	medio		3
	dark	foncée	dunkel	oscuro	Gold No.1	5

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10.		**QN MS/VG**	**(+) (a)**				
		Inflorescence: number of flowers	**Inflorescence : nombre de fleurs**	**Blütenstand: Anzahl der Blüten**	**Inflorescencia: número de flores**		
		few	petit	gering	bajo		1
		medium	moyen	mittel	medio	Gold No.1	2
		many	grand	groß	alto	Helloevening	3
11.		**QN MS/VG**	**(+) (a)**				
		Flower: width	**Fleur : largeur**	**Blüte: Breite**	**Flor: anchura**		
		narrow	étroite	schmal	estrecha		1
		medium	moyenne	mittel	media	Gold No.1	3
		broad	large	breit	ancha		5
12.	**(*)**	**PQ VG**		**(a)**			
		Flower: color of upper side	**Fleur : couleur de la face supérieure**	**Blüte: Farbe der Oberseite**	**Flor: color de la cara superior**		
		white	blanc	weiß	blanco		1
		white and light purple	blanc et pourpre clair	weiß und hellpurpurn	blanco y púrpura claro		2
		white and medium purple	blanc et pourpre moyen	weiß und mittelpurpurn	blanco y púrpura medio	Gold No.1	3
		white and dark purple	blanc et pourpre foncé	weiß und dunkelpurpurn	blanco y púrpura oscuro		4
13.	**(*)**	**PQ VG**		**(b)**			
		Young fruit: ground color of skin	**Jeune fruit : couleur de fond de l'épiderme**	**Junge Frucht: Grundfarbe der Schale**	**Fruto joven: color de fondo de la piel**		
		white	blanc	weiß	blanco	Helloevening	1
		yellow	jaune	gelb	amarillo		2
		light green	vert clair	hellgrün	verde claro	Gold No.1	3
		medium green	vert moyen	mittelgrün	verde medio	Monrou Dance	4
		dark green	vert foncé	dunkelgrün	verde oscuro		5

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14.	**(*)**	**PQ VG**	**(+) (c)**				
		Fruit: ground color	**Fruit : couleur de fond**	**Frucht: Grundfarbe**	**Fruto: color de fondo**		
		white	blanc	weiß	blanco		1
		light yellow	jaune clair	hellgelb	amarillo claro	Gold Boy	2
		medium yellow	jaune moyen	mittelgelb	amarillo medio	Gold No.1	3
		orange	orange	orange	naranja		4
		purple	pourpre	purpurn	púrpura		5
15.	**(*)**	**QN VG**	**(+) (c)**				
		Fruit: area of stripes	**Fruit : surface des stries**	**Frucht: Fläche der Streifen**	**Fruto: superficie que ocupan las rayas**		
		absent or very small	absente ou très petite	fehlend oder sehr klein	nula o muy pequeña		1
		small	petite	klein	pequeña	Gold No.1	3
		medium	moyenne	mittel	media		5
		large	grande	groß	grande	Appulinmimi	7
16.	**(*)**	**PQ VG**	**(c)**				
		Fruit: color of stripes	**Fruit : couleur des stries**	**Frucht: Farbe der Streifen**	**Fruto: color de las rayas**		
		light purple	pourpre clair	hellpurpurn	púrpura claro		1
		medium purple	pourpre moyen	mittelpurpurn	púrpura medio	Gold No.1	2
		dark purple	pourpre foncé	dunkelpurpurn	púrpura oscuro	Appulinmimi	3
		greyish purple	pourpre grisâtre	graupurpurn	púrpura grisáceo		4
17.	**(*)**	**QN MS/VG**	**(+) (d)**				
		Fruit: length	**Fruit : longueur**	**Frucht: Länge**	**Fruto: longitud**		
		short	court	kurz	corto		3
		medium	moyen	mittel	medio	Gold No.1	5
		long	long	lang	largo		7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
18.	**(*)**	**QN MS/VG**	**(+) (d)**				
		Fruit: diameter	**Fruit : diamètre**	**Frucht: Durchmesser**	**Fruto: diámetro**		
		small	petit	klein	pequeño		3
		medium	moyen	mittel	medio	Gold No.1	5
		large	grand	groß	grande		7
19.	**(*)**	**PQ VG**	**(+) (d)**				
		Fruit: shape in longitudinal section	**Fruit : forme en section longitudinale**	**Frucht: Form im Längsschnitt**	**Fruto: forma en sección longitudinal**		
		broad ovate	ovale large	breit eiförmig	oval ancho		1
		medium ovate	ovale moyen	mittel eiförmig	oval medio	Monrou Dance	2
		circular	circulaire	kreisförmig	circular	Gold No.1	3
		oblong	oblong	rechteckig	oblongo		4
		elliptic	elliptique	elliptisch	elíptico		5
20.	**(*)**	**QN VG**	**(+) (d)**				
		Fruit: depth of stalk cavity	**Fruit : profondeur de la cavité du pédoncule**	**Frucht: Tiefe der Stielhöhle**	**Fruto: profundidad de la cavidad peduncular**		
		shallow	peu profonde	flach	poco profunda	Gold No.1	1
		medium	moyenne	mittel	media	Appulinmimi	3
		deep	profonde	tief	profunda		5
21.	**(*)**	**PQ VG**	**(+) (d)**				
		Fruit: shape of apex	**Fruit : forme de l'extrémité**	**Frucht: Form der Spitze**	**Fruto: forma del ápice**		
		acute	aiguë	spitz	agudo	Monrou Dance	1
		rounded	arrondie	abgerundet	redondeado	Gold No.1	2
		truncate	tronquée	abgestumpft	truncado		3
		retuse	rétuse	eingedrückt	retuso		4

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
22.		**QN MS/VG**	**(+) (d)**				
		Fruit: calyx size compared to diameter of fruit	**Fruit : taille du calice par rapport au diamètre du fruit**	**Frucht: Kelchgrösse im Vergleich zum Durchmesser der Frucht**	**Fruto: tamaño del cáliz en comparación con el diámetro del fruto**		
		small	petit	klein	pequeño		3
		medium	moyen	mittel	medio	Gold No.1	5
		large	grand	groß	grande		7
23.	**(*)**	**PQ VG**	**(d)**				
		Fruit: color of flesh	**Fruit : couleur de la chair**	**Frucht: Farbe des Fleisches**	**Fruto: color de la pulpa**		
		white	blanc	weiß	blanco		1
		green	vert	grün	verde		2
		yellowish green	vert jaunâtre	gelblich grün	verde amarillento	Monrou Dance	3
		light yellow	jaune clair	hellgelb	amarillo claro		4
		medium yellow	jaune moyen	mittelgelb	amarillo medio	Gold No.1	5
		orange	orange	orange	naranja		6
24.		**QN VG**	**(+) (d)**				
		Fruit: firmness of flesh	**Fruit : fermeté de la chair**	**Frucht: Festigkeit des Fleisches**	**Fruto: firmeza de la pulpa**		
		soft	souple	weich	blanda	Monrou Dance	3
		medium	moyenne	mittel	media	Gold No.1	5
		firm	ferme	fest	firme		7
25.	**(*)**	**QN MS**	**(d)**				
		Time of harvest maturity	**Époque de maturité de récolte**	**Zeitpunkt der Erntereife**	**Época de madurez para la cosecha**		
		early	précoce	früh	temprana	Helloevening	3
		medium	moyenne	mittel	media	Gold No.1	5
		late	tardive	spät	tardía	Appulinmimi	7

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Observations on the plant, stems, leaves and flowers should be made at the time of flowering of the second inflorescence.

(b) Observations on the young fruits should be made on fruits 20-30 days after opening of the flower, before the stripes development, the ground color change.

(c) Observations on the ground color and stripes of the fruit should be made on fully developed fruits before the color change due to ripening.

(d) Observations on the fruit should be made on fruits at harvest maturity.

8.2 Explanations for individual characteristics

Ad. 2: Stem: anthocyanin coloration

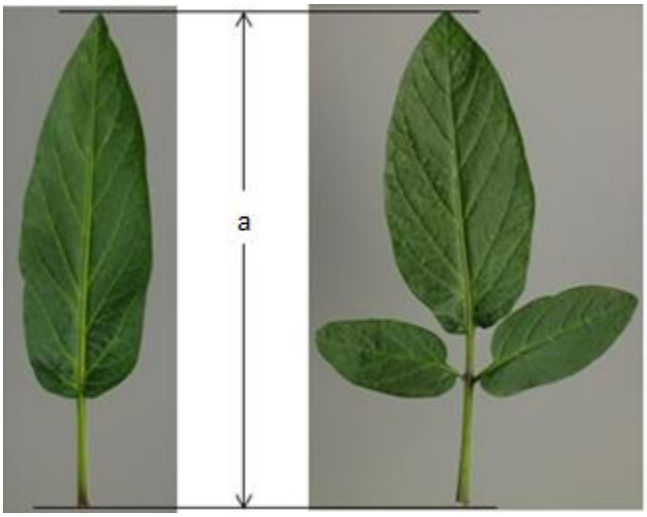
The anthocyanin coloration of the stem should be observed in the middle third of the primary stem.

Ad. 4: Leaf: type

1
simple

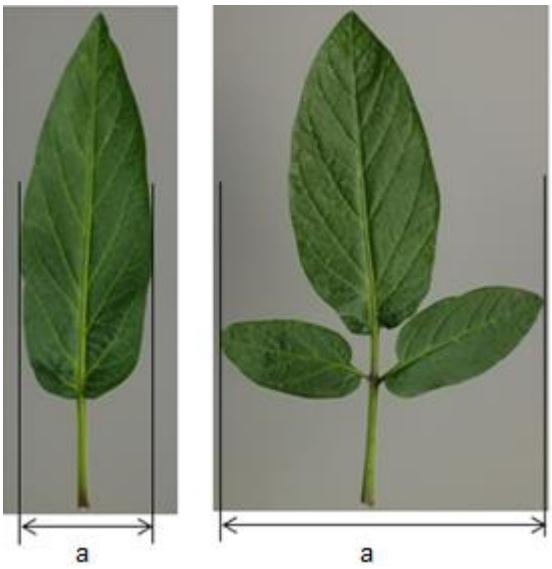
2
compound

Ad. 5: Leaf: length



a = Leaf: length

Ad. 6: Leaf: width



a = Leaf: width

Ad. 7: Leaf: intensity of anthocyanin coloration of midrib

The anthocyanin coloration of the midrib should be observed on the lower side of the leaf.

Ad. 8: Leaf blade: shape

In the case of varieties with compound leaves, observation should be made on the terminal leaflet.

	← broadest part →	
width (ratio length/width)	below middle	at middle
narrow (high)	 2 medium lanceolate	
medium (medium)	 1 broad lanceolate	 4 elliptic
broad (low)		 3 circular

Ad. 10: Inflorescence: number of flowers

The total number of flowers should be assessed, including flower buds, open flowers, and faded flowers.

one to five	six to ten	more than ten
1	2	3
few	medium	many

Ad. 11: Flower: width

a = Flower: width

Ad. 14: Fruit: ground color

The ground color is the first color to appear chronologically during the development of the plant part. Other colors may develop in time in the form of stripes.
The ground color is not always the color occupying the largest surface area of the plant part concerned. For certain organs having two layers of tissue containing color pigmentation, and one layer is covering the other on the upper side of the organ it may be appropriate to determine the ground color by observing the main color of the lower side of the organ.

Ad. 15: Fruit: area of stripes

To be observed by comparing the area of the stripes to the surface area of the fruit.

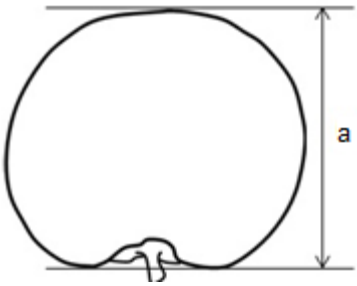
1
absent or very small

3
small

5
medium

7
large

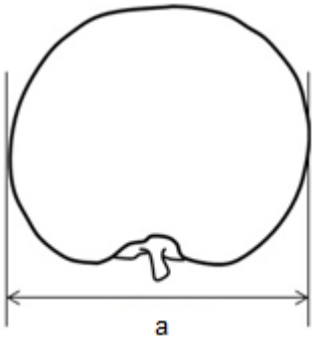
Ad. 17: Fruit: length



a = Fruit: length

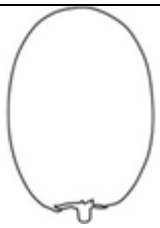
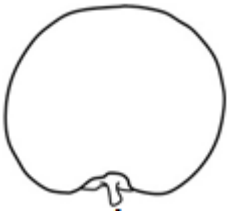
Ad. 18: Fruit: diameter

The diameter of the fruit should be observed at the broadest part.



a = Fruit: diameter

Ad. 19: Fruit: shape in longitudinal section

	← broadest part →		
	below middle	at middle	
width (ratio length/width)			
narrow (high)	 2 medium ovate	 4 oblong	 5 elliptic
medium (medium)	 1 broad ovate		
broad (low)		 3 circular	

Ad. 20: Fruit: depth of stalk cavity

1
shallow

3
medium

5
deep

Ad. 21: Fruit: shape of apex

1
acute

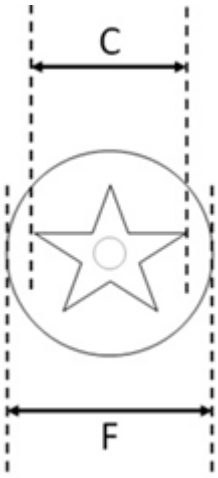
2
rounded

3
truncate

4
retuse

Ad. 22: Fruit: calyx size compared to diameter of fruit

The calyx size should be assessed by the ratio of "the calyx width / the maximum diameter of fruit".



calyx size compared to diameter of fruit = C/F

Ad. 24: Fruit: firmness of flesh

The firmness should be assessed by hand by pressing the center of the flesh of the fruit which is cut to half horizontally.

9. Literature

Bioversity, 2004: Descriptors for Pepino (Solanum muricanum). Bioversity International.

Ministry of Agriculture, Forestry & Fisheries of Japan., 2013: National Test Guidelines for Pepino.
Sakata, Y., 1988: Nougyou-gijutsu-taikei Yasai-hen 11. Shadanhojin Nousan-gyoson-bunkakyokai. Tokyo, JP, pp. 551-555

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	*Solanum muricatum* Aiton
1.2	Common name	Melon-pear, Pepino

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

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

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

(c) unknown cross [ ]

4.1.2 Discovery and development [ ]
(please state where and when discovered and how developed)

4.1.3 Mutation [ ]
(please state parent variety)

4.1.4 Other [ ]
(Please provide details)

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:

4.2 Method of propagating the variety

4.2.1 Vegetative propagation

(a) Cuttings [ ]
(b) *In vitro* propagation [ ]
(c) Other (state method) [ ]

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 (4)	**Leaf: type**		
	simple	Gold No.1	1 [ ]
	compound	Helloevening	2 [ ]
5.2 (14)	**Fruit: ground color**		
	white		1 [ ]
	light yellow	Gold Boy	2 [ ]
	medium yellow	Gold No.1	3 [ ]
	orange		4 [ ]
	purple		5 [ ]
5.3 (15)	**Fruit: area of stripes**		
	absent or very small		1 [ ]
	very small to small		2 [ ]
	small	Gold No.1	3 [ ]
	small to medium		4 [ ]
	medium		5 [ ]
	medium to large		6 [ ]
	large	Appulinmimi	7 [ ]
	large to very large		8 [ ]
	very large		9 [ ]
5.4 (19)	**Fruit: shape in longitudinal section**		
	broad ovate		1 [ ]
	medium ovate	Monrou Dance	2 [ ]
	circular	Gold No.1	3 [ ]
	oblong		4 [ ]
	elliptic		5 [ ]

	Characteristics	Example Varieties	Note
5.5 (23)	**Fruit: color of flesh**		
	white		1 [ ]
	green		2 [ ]
	yellowish green	Monrou Dance	3 [ ]
	light yellow		4 [ ]
	medium yellow	Gold No.1	5 [ ]
	orange		6 [ ]

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: shape in longitudinal section*	*circular*	*elliptic*

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

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:

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 document]