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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

HUSK TOMATO *

UPOV Code: PHYSA

(*Physalis philadelphica* Lam.
 (Sym: *Physalis ixocarpa* Brot.), *Physalis*
pruinosa L. and *Physalis angulata* L.)

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Mexico

*to be considered by the
 Technical Working Party for Vegetables (TWV) at its thirty-ninth session,
 to be held in Nitra, Slovakia, from June 6 to 10, 2005*

Alternative Names: *

Botanical name	English	French	German	Spanish
<i>Physalis philadelphica</i> Lam. (Sym: <i>Physalis ixocarpa</i> Brot.), <i>Physalis pruinosa</i> L. and <i>Physalis angulata</i> L.	Husk Tomato	Physalis, Tomatillo	Tomatillo	Tomatillo, Tomate verde, Tomate de cáscara

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 *Physalis philadelphica* Lam. (Sym: *Physalis ixocarpa* Brot.), *Physalis pruinosa* L. and *Physalis angulata* L.

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 seed.

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

15 g

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.

3.3.1 Type of observation

The recommended method of observing the characteristic is indicated by the following key in the second column of the Table 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”

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 40 plants, which should be divided between two or more 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 *Number of Plants / Parts of Plants to be Examined*

Unless otherwise indicated, all observations should be made on 20 plants or parts taken from each of 20 plants.

3.6 *Additional Tests*

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 *Distinctness*

4.1.1 *General Recommendations*

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

4.1.2 *Consistent Differences*

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

4.1.3 *Clear Differences*

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

4.2 *Uniformity*

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

4.2.2 The assessment of uniformity should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.3 *Stability*

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

4.3.2 Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.”

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

- (a) Plant: growth habit (characteristic 3)
- (b) Stem: longitude of internodes (characteristic 5)
- (c) Stem: anthocyanin coloration on internodes (characteristic 6)
- (d) Fruit: anthocyanin coloration of calyx (characteristic 24)
- (e) Fruit: length (characteristic 26)
- (f) Fruit: shape in longitudinal section (characteristic 29)
- (g) Fruit: main color (characteristic 33)
- (h) Fruit: length of peduncle (characteristic 44)
- (i) Fruit: thickness of peduncle (characteristic 45)
- (j) Fruit: number of seeds (characteristic 48)

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

6. Introduction to the Table of Characteristics

6.1 *Categories of Characteristics*

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 *States of Expression and Corresponding Notes*

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

6.3 *Types of Expression*

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

6.4 *Example Varieties*

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

6.5 *Legend*

(*) Asterisked characteristic – see Chapter 6.1.2

QL: Qualitative characteristic – see Chapter 6.3

QN: Quantitative characteristic – see Chapter 6.3

PQ: Pseudo-qualitative characteristic – see Chapter 6.3

MG: single measurement of a group of plants or parts of plants – see Chapter 3.3.1

MS: measurement of a number of individual plants or parts of plants – see Chapter 3.3.1

VG: visual assessment by a single observation of a group of plants or parts of plants – Chapter 3.3.1

VS: visual assessment by observation of individual plants or parts of plants” – see Chapter 3.3.1

(a)-(c) 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	Seedling: anthocyanin coloration		Plántula: pigmentación con antocianinas		
QL	(a)	absent		ausente	Población 3	1
		present		presente	Tamazula M-3	9
2. (*) (+)	VG	Seedling: pubescence		Plántula: pubescencia		
QL	(a)	absent		ausente	Población 3	1
		present		presente	Tamazula M-3	9
3. (*) (+)	VG	Plant: growth habit (at harvest maturity, upper second level of branching)		Planta: tipo de crecimiento (a madurez hortícola de frutos del segundo nivel de ramificación)		
QN	(b)	erect		erecto	Tamazula M-3	1
		semi-erect		semi-erecto	Diamante	3
		horizontal		postrado	Chapingo	5
4. (*)	MS/ VS	Stem: height to the first branching		Tallo: altura a la primera bifurcación		
QN	(b)	short		baja	Chapingo	3
		medium		intermedia		5
		long		alta	Tecoautla	7
5. (*)	VG	Stem: length of internodes (as for 3)		Tallo: longitud de entrenudos (como en 3)		
QL	(b)	short		corto	Población -3	3
		medium		intermedia		5
		long		largo	Tecamac SM3	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
6. (*)	VG	Stem: anthocyanin coloration on internodes (as for 3)		Tallo: pigmentación con antocianinas en entrenudos (como en 3)		
QL	(b)	absent		ausente	Chapingo	1
		present		presente	Tamazula	9
7. (*)	VG	<u>Varieties with anthocyanin coloration only:</u> Stem: intensity of anthocyanin coloration in internodes (as for 3)		<u>Solamente en variedades con antocianina:</u> Tallo: pigmentación con antocianinas en entrenudos (como en 3)		
QN	(b)	very weak		muy débil	Chapingo	1
		weak		débil		3
		medium		media		5
		strong		fuerte		7
		very strong		muy fuerte	Tamazula	9
8.	VG	Stem: pubescence (as for 3)		Tallo: pubescencia (como en 3)		
QN	(b)	absent or very weak		ausente		1
		weak		escaso		3
		medium		media		5
		strong		frecuente		7
		very strong		abundante		9
9.	VG	Leaf blade: shape		Hoja: forma		
PQ	(b)	ovate		oval		1
		lanceolate		lanceolada		2

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
10.	MS	Leaf blade: length		Hoja: longitud		
QN	(b)	short		corta		3
		medium		media		5
		long		larga		7
11.	MS	Leaf blade: width		Hoja: anchura		
QN	(b)	narrow		angosta		3
		medium		media		5
		broad		ancha		7
12.	MS	Leaf blade: margin		Hoja: margen		
QN		smooth		liso		1
		few dentate		poco dentado		2
		medium		intermedio		3
		dentate		dentado		4
		very dentate		muy adentado		5
13.	VG	Leaf blade: color		Hoja: color		
QN	(b)	yellowish green		verde limón		1
		green		verde		2
		purplish green		verde morado		3
14.	VG	Leaf blade: intensity of color		Hoja: intensidad del color		
QN	(b)	weak		claro		3
		medium		medio		5
		strong		oscuro		7
15.		Leaf blade: pubescence		Hoja: pubescencia		
	(b)	weak		escasa		3
		medium		media		5
		strong		abundante		7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
16.	VS	Petiole: attitude		Pecíolo: porte		
QN	semi-erect			semi-erecto		3
	horizontal			horizontal		5
	drooping			colgante		7
17.	MS/ VG	Petiole: length		Pecíolo: longitud		
QN	short			corto		3
	medium			medio		5
	long			Largo		7
18.	VG	Petiole: pubescence (as for 3)		Pecíolo: pubescencia (como en 3)		
QN	(b) absent			ausente		1
	weak			escaso		3
	medium			media		5
	strong			frecuente		7
	very strong			abundante		9
19.	VS	Flower: attitude of pedicel		Flor: porte del pedicelo		
QN	erect			erecto		1
	semi-erect			semi-erecto		3
	horizontal			horizontal		5
	semi-drooping			semi-colgante		7
	drooping			colgante		9
20.	VS	Flower: color of anthers		Flor: color de anteras		
QL	white			blanco		1
	yellow			amarillo		2
	purple			morado		3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
21.	VS	Flower: number of anthers		Flor: número de anteras		
QL		five		cinco		1
		more than five		más de cinco		2
22.	VS	Flower: anthocyanin coloration		Flor: pigmentación con antocianina		
QL		absent		ausente		1
		present		presente		9
23.	VS	Fruit: anthocyanin coloration of calyx (at harvest maturity)		Fruto: pigmentación con antocianinas del cáliz (en madurez horticola)		
QL	(c)	absent		ausente		1
		present		presente		9
24.	VS	Fruit: anthocyanin coloration of calyx (at physiological maturity)		Fruto: pigmentación del cáliz con antocianinas (en madurez fisiológica)		
QL	(c)	absent		ausente		1
		present		presente		9
25.	(+)	Fruit: adherence of calyx (at physiological maturity)		Fruto: adherencia del cáliz (en madurez fisiológica)		
	(c)	absent		ausente		1
		weak		débil		3
		medium		media		5
		strong		fuerte		7
		very strong		muy fuerte		9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
26.	MS	Fruit: length		Fruto: longitud		
(*)						
QN	(c)	short		pequeño		3
		medium		media		5
		long		grande		7
27.	MS	Fruit: width		Fruto: anchura		
QN	(c)	narrow		pequeño		3
		medium		medio		5
		broad		grande		7
28.	MS	Fruit: ratio length/width		Fruto: relación largo/ ancho		
QN	(c)	small		pequeña		3
		medium		media		5
		large		grande		7
29	VG	Fruit: shape in longitudinal section		Fruto: forma longitudinal		
(*)						
(+)						
PQ	(c)	flat		aplanada		1
		round		redonda		2
		heart shapened		acorazonada		3
		square		cuadrangular		4
		triangular		triangular		5
30.	VG	Fruit: shape in cross section		Fruto: forma transversal		
(+)						
PQ	(c)	elliptic		elíptica		1
		angular		angular		2
		circular		circular		3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
31.	VG	Fruit: depression at base		Fruto: profundidad de la base		
(+)						
QN	(c)	shallow		poco profunda		3
		medium		media		5
		deep		profunda		7
32	VG	Fruit: shape of apex		Fruto: forma del ápice		
(*)						
(+)						
PQ		pointed		puntiaguda		1
		rounded		redondeada		2
		depressed		hendida		3
33	VG	Fruit: main color (at physiological maturity)		Fruto: color principal (en madurez hortícola)		
(*)						
PQ	(c)	white		blanco		1
		yellow		amarillo		2
		orange		anaranjado		3
		green		verde		4
		purple		morado		5
34.	VG	Fruit: color		Fruto: color		1
PQ	(c)	yellow		amarillo		2
		yellowish green		verde amarillento		3
		greenish yellow		amarillo verdoso		4
		green		verde		5
		purplish green		verde morado		6
		greenish purple		morado verdoso		7
		purple		morado		8

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
35.	Fruit: intensity of color			Fruto: intensidad del color		
	(c) light			claro		3
	medium			medio		5
	dark			oscuro		7
36.	VG Fruit: glossiness			Fruto: brillo		
QN	(c) weak			débil		3
	medium			media		5
	strong			fuerte		7
37.	Fruit: color of flesh (at physiological maturity)			Fruto: color de la pulpa (en madurez fisiológica)		
(*)	(c) white			blanco		1
	yellow			amarillo		2
	yellowish green			verde amarillento		3
	greenish-yellow			amarillo verdoso		4
	green			verde		5
	dark green			verde oscuro		6
	purplish green			verde morado		7
	greenish-purple			morado verdoso		8
	purple			morado		9
38.	MS Fruit: number of locules			Fruto: número de lóculos		
QN	(c) two			dos		1
	three			tres		2
	four			cuatro		3
	five			cinco		4
	more than five			más de cinco		5

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
39.	VG	Fruit: coverage of calyx (at physiological maturity)		Fruto: cobertura del cáliz (en madurez hortícola)		
(+)						
QN	(c)	weak		mínima		1
		medium		parcial		2
		entire		total		3
40.	VG	Fruit: anthocyanin coloration of calyx (at harvest maturity)		Fruto: pigmentación del cáliz con antocianinas (en madurez hortícola)		
(*)						
QL	(c)	absent		ausente		1
		present		presente		9
41.	VG	Fruit: anthocyanin coloration of calyx (at physiological maturity)		Fruto: pigmentación del cáliz con antocianinas (en madurez fisiológica)		
(*)						
QL	(c)	absent		ausente		1
		present		presente		9
42.	VG	Fruit: pubescence of calyx (as 3)		Fruto: pubescencia de cáliz (como en 3)		
QN	(c)	absent		ausente		1
		weak		escaso		3
		medium		media		5
		strong		frecuente		7
		very strong		abundante		9
43.	VG	Fruit: ribbing of calyx		Fruto: acostillado del cáliz		
(*)						
(+)						
QL	(c)	absent		ausente		1
		present		presente		9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
44.	MS	Fruit: length of peduncle		Fruto: longitud del pedúnculo		
QN	(c)	short		corto		3
		medium		medio		5
		long		largo		7
45.	VG	Fruit: thickness of peduncle		Fruto: grosor del pedunculo		
QN	(c)	small		delgado		3
		medium		intermedio		5
		large		grueso		7
46.	VG	Fruit: firmness		Fruto: firmeza		
QN	(c)	small		fofo		3
		medium		mediano		5
		large		firme		7
47.	VG	Fruit: texture of flesh		Fruto: densidad de la pulpa		
QN	(c)	soft		laxa		3
		medium		media		5
		firm		densa		7
48.	VG	Fruit: number of seeds (at physiological maturity)		Fruto: cantidad de semillas (en madurez fisiológica)		
QN	(c)	few		pocas		3
		medium		medio		5
		many		muchas		7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
49.	VG					
(*)	Seed: color			Semilla: color		
PQ	(c)	white		blanco		1
		yellow		amarillo		2
		brown yellow		amarillo café		3
		brown		café		4
		dark brown		café oscuro		5
50.	MS					
	Seed: size			Semilla: tamaño		
QN	(c)	small		pequeña		3
		medium		medio		5
		large		grande		7
51.	VG					
(*)	Time of flowering			Tiempo a floración		
(+)	(at first flower)			(a primera flor)		
QN		early		precoz		3
		medium		media		5
		late		tardía		7
52.	VG					
(*)	Time of harvest			Fruto: tiempo a		
(+)	maturity			madurez comercial		
QN		early		precoz		3
		medium		media		5
		late		tardía		7
53.	VG					
(*)	Time of			Fruto: tiempo a		
(+)	physiological			madurez fisiológica		
	maturity					
QN		early		precoz		3
		medium		media		5
		late		tardía		7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
54.	Fruit: dry matter content			Fruto: contenido de materia seca		
	(c) low			bajo		3
	medium			medio		5
	high			alto		7
55.	VS Resistance to <i>Fusarium</i>			Resistencia a <i>Fusarium</i>		
	(+)					
QL	absent			ausente		1
	present			presente		9
56.	VS Resistance to <i>Rizoctonia</i>			Resistencia a <i>Rizoctonia</i>		
	(+)					
QL	absent			ausente		1
	present			presente		9
57.	VS Resistance to <i>Oidium</i>			Resistencia a <i>Oidium</i>		
	(+)					
QL	absent			ausente		1
	present			presente		9
58.	VS Resistance to mosaic virus			Resistencia a virus del mosaico		
	(+)					
QL	absent			ausente		1
	present			presente		9

8 Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

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

- (a) Seedling: The observation of seedling should be made at stage of 10 cm.
- (b) Plant, stem and leaf blade: All observations on the plant, stem and leaf blade should be made at the beginning of flowering.
- (c) Fruit and seed: Unless other wise indicated, all observations on the fruit and seed should be made at commercial maturity.

8.2 *Explanations for individual characteristics]*

Ad. 1: Seedling: anthocyanin coloration

[Still to be provided]

Ad 2: Seedling: pubescence

[Still to be provided]

Ad 3: Plant: growth habit (at harvest maturity, upper second level of branching)

[Still to be provided]

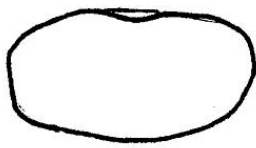
Ad. 7: Stem: intensity of anthocyanin coloration in internodes.

Most of the varieties are classed 1 to 5. Expression of anthocyanin is influenced by day temperature. Under greenhouse conditions, the variation is rather low.

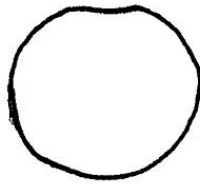
Ad. 24 + 25: Fruit: anthocyanin coloration of calyx and adherence of calyx (at physiological maturity)

These characteristics are assessed by observing the fruits on the second branching, plant by plant. These characteristics are assessed at physiological maturity because in this development stage of the fruits, some varieties which showing better these characteristics.

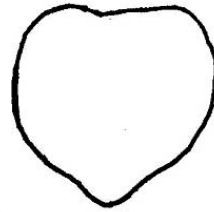
Ad. 29: Fruit: shape in longitudinal section



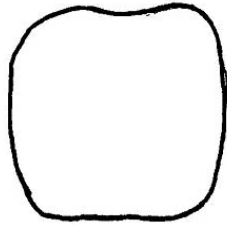
1
flat



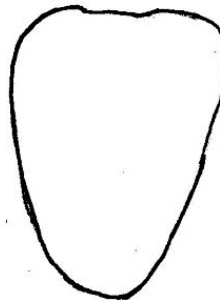
2
round



3
Herat shapened

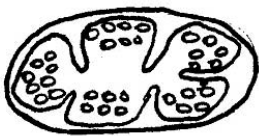


4
square



5
triangular

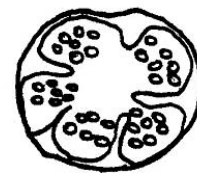
Ad. 30: Fruit: shape in cross section



1
elliptic

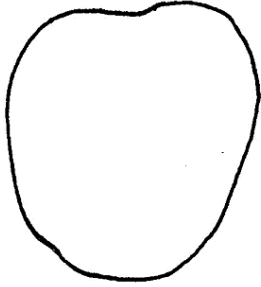


2
angular

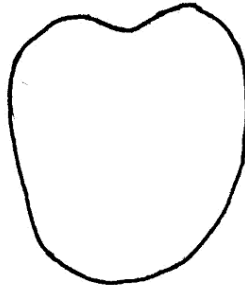


3
circular

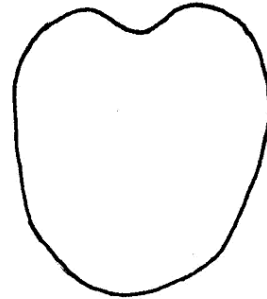
Ad. 31: Fruit: depression at base



3
shallow

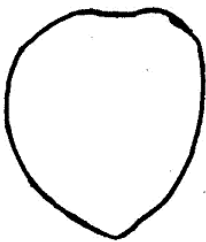


5
medium

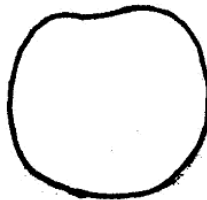


7
deep

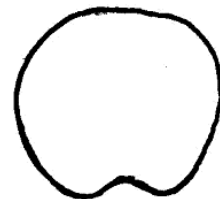
Ad. 32: Fruit: shape of apex



1
pointed

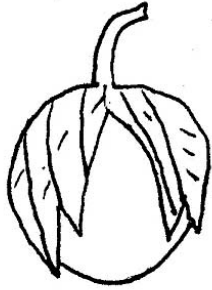


2
rounded

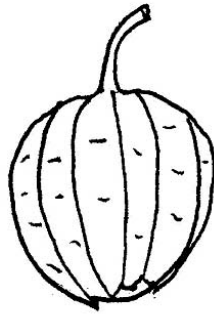


3
depressed

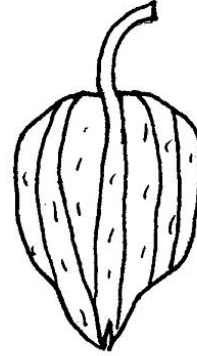
Ad. 39: Fruit: coverage of calyx



1
weak

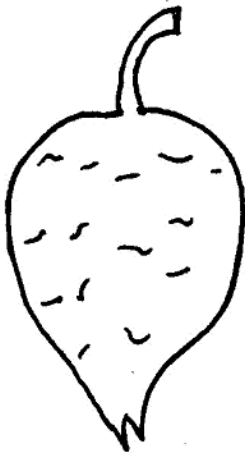


2
medium

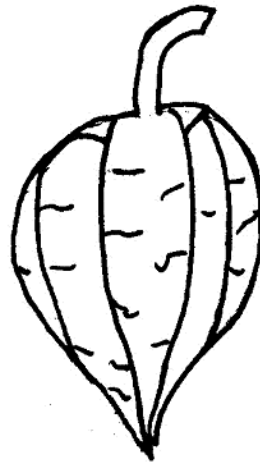


3
entire

Ad. 43: Fruit: ribbing of calyx



1
absent



9
present

Ad. 51: Time of flowering

This characteristic is assessed by observing the flowering date of the flowers on the second branching, plant by plant. It is recommended not to record the time of flowering on the first branching, as the expression on the first flower is more influenced by the seed vigor and the plantation quality. The date of flowering is recorded by the plot average.

Ad. 52: Time of harvest maturity

This characteristic is assessed by observing the beginning dryness of apex of the calyx of the fruits on the second branching, plant by plant. The date of harvest maturity is recorded by the plot average.

Ad. 53: Time of physiological maturity

This characteristic is assessed by observing the ending growth of fruits on the second branching, plant by plant. It is recommended to check when beginning the change of color of the fruit calyx. The date of physiological maturity is recorded by the plot average.

Ad. 55: Resistance to *Fusarium oxysporum* f. sp. *lycopersici* Race 0 (ex 1) and Race 1 (ex 2)

<u>Method</u>	
<u>Maintenance of Races</u>	
Type of medium:	On agar medium
Special conditions:	22-25° C, transplantation of Races each month
<u>Execution of test</u>	
Growth stage of plants:	Cotyledons expanded
Temperature:	Day: 28°C; night: 25°C
Light:	12 hours
Growing method:	Under high humidity, in the greenhouse or climatic room
Method of inoculation:	Soaking of roots, plants in liquid medium of fungi, after cutting radicels, thereafter replanting
Duration of test:	
- from sowing to inoculation:	10 to 20 days
- from inoculation to reading:	20 to 25 days
Number of plants tested:	
Remarks:	Reading: test with heterozygous F1 varieties must be interpreted carefully because <u>on test</u> Race 1, and even Race 0, can attack some plants. Heterozygote varieties can show symptoms of a slightly lower level of expression.
Standard varieties:	

Ad. 55: Resistance to *Fusarium oxysporum* f. sp. *radicis lycopersici*

<u>Method</u>	
<u>Maintenance of Race</u>	
Type of medium:	On synthetic medium (according to Messiaen)
Special conditions:	Refrigerator 4°C
<u>Execution of test</u>	
Growth stage of plants:	Appearance of third leaf
Temperature:	Day: 22° C; night: 16°C
Light: 14 hours.	Light: 14 hours
Growing method:	Climatic room
Method of inoculation:	Soaking of roots and of hypocotyl axis for five minutes in the inoculum. After inoculation, transplantation of plantlets in steam disinfected sand
<u>Duration of test</u>	
- from sowing to inoculation:	- from sowing to inoculation: 18 to 20 days
- from inoculation to reading:	- from inoculation to reading: 10 days
Number of plants tested:	10 to 20 plants
Remarks:	Need for frequent renewal of Races because of loss of pathogeneity
Standard varieties:	

Ad.58: Resistance to Tomato Mosaic Virus, Strains 0, 1, 2 and 1-2

<u>Method</u>	
<u>Maintenance of Strains</u>	
Type of medium:	On plants or dry leaf
Special conditions:	Congelation or BOS method
Identification:	Use the Strain 0 inducing necrosis on varieties with allele Tm2 ₂
Execution of test	Execution of test
Growth stage of plants:	Expanded cotyledons
Expanded cotyledons.	
Temperature:	Day: 30 to 35° C; night: 25 to 30° C
Light: 12 hours.	Light: 12 hours
Growing method:	In the greenhouse
Method of inoculation:	Mechanical, by rubbing of cotyledons
Duration of test	Duration of test
- from sowing to inoculation:	12 to 14 days
- from inoculation to reading:	10 to 12 days
Number of plants tested:	15 to 30 plants
Standard varieties:	

Ad. 57: Resistance to *Oidium lycopersicum*

<u>Method</u>	
<u>Maintenance of Strain</u>	
Type of medium:	On tomato plants
Special conditions:	Climatic room
<u>Execution of test</u>	
Growth stage of plants:	3 weeks
Temperature:	24°C during the day; 18°C during the night
Light:	12 hours
Method of inoculation:	- by spraying (10 ⁴ conidies/ml) on leaves - by dredging (uncontrolled inoculum) on leaves
Duration of test	- from sowing to inoculation: 18 to 20 days - from inoculation to reading: 15 to 18 days
Number of plants tested:	30 plants/lot
Remarks:	
Scale of notes:	- no sporulation - sporulation without extension (necrotic points) - moderated sporulation - abundant sporulation
Standard varieties:	susceptible: resistant

Ad. 56: Resistance to *Rizoctonia* spp.

<u>Method</u>	
<u>Maintenance of isolate</u>	
Type of medium:	On synthetic medium
Special conditions:	Refrigerator 4° C without light
Execution of test	Execution of test
Growth stage of plants	3 leaves expanded
Temperature:	Constant, day: 24° C, night: 24°C
Light:	12 hours
Growing method:	Climatic room
Method of inoculation:	Pulverization on leaves
Duration of test	Duration of test
- from sowing to inoculation:	20 to 22 days
- from inoculation to reading:	10 days
Number of plants tested:	30 plants
Remarks:	Production of inoculum on medium V8 under light
Standard varieties: susceptible:	susceptible: resistant:

9. Literature

{xx}

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:																						
		Application date: (not to be filled in by the applicant)																						
<p>TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>																								
<p>1. Subject of the Technical Questionnaire</p> <p>1.1 Botanical name <i>Physalis philadelphica</i> Lam. (<i>Syn: Physalis ixocarpa</i> Brot.), <i>Physalis pruinosa</i> L. and <i>Physalis angulata</i> L </p> <p>1.2 Common name Husk Tomato</p> <p style="text-align: center;">ASW 14</p> <p>(a) In the case of Test Guidelines covering more than one species, additional boxes should be added in the following format:</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>“1. Subject of the Technical Questionnaire (please indicate the relevant species):</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 40%;">1.1.1 Botanical name</td> <td style="width: 30%;">[species 1]</td> <td style="width: 20%;"></td> </tr> <tr> <td></td> <td>1.1.2 Common name</td> <td>[species 1]</td> <td>[]</td> </tr> <tr> <td></td> <td>1.2.1 Botanical name</td> <td>[species 2]</td> <td></td> </tr> <tr> <td></td> <td>1.2.2 Common name</td> <td>[species 2]</td> <td>[]”</td> </tr> </table> <p>etc.</p> </div> <p>(b) If the Test Guidelines cover a genus or a large number of species, question 1 should be presented as follows:</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>“1. Subject of the Technical Questionnaire (please complete):</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"></td> <td style="width: 40%;">1.1 Botanical name</td> <td style="width: 50%;"></td> </tr> <tr> <td></td> <td>1.2 Common name”</td> <td></td> </tr> </table> </div> <p>with the boxes left blank for completion by the applicant.</p>				1.1.1 Botanical name	[species 1]			1.1.2 Common name	[species 1]	[]		1.2.1 Botanical name	[species 2]			1.2.2 Common name	[species 2]	[]”		1.1 Botanical name			1.2 Common name”	
	1.1.1 Botanical name	[species 1]																						
	1.1.2 Common name	[species 1]	[]																					
	1.2.1 Botanical name	[species 2]																						
	1.2.2 Common name	[species 2]	[]”																					
	1.1 Botanical name																							
	1.2 Common name”																							

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
<p>2. Applicant</p> <p>Name <input data-bbox="625 371 1350 423" type="text"/></p> <p>Address <input data-bbox="625 448 1350 640" type="text"/></p> <p>Telephone No. <input data-bbox="625 665 1350 716" type="text"/></p> <p>Fax No. <input data-bbox="625 741 1350 792" type="text"/></p> <p>E-mail address <input data-bbox="625 817 1350 869" type="text"/></p> <p>Breeder (if different from applicant) <input data-bbox="625 931 1350 983" type="text"/></p>		
<p>3. Proposed denomination and breeder's reference</p> <p>Proposed denomination (if available) <input data-bbox="625 1122 1350 1173" type="text"/></p> <p>Breeder's reference <input data-bbox="625 1245 1350 1296" type="text"/></p>		

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:						
<p>#4. Information on the breeding scheme and propagation of the variety</p> <p>4.1 Breeding scheme</p> <p>ASW 15</p>								
<p>(a) <i>Alternative 1</i></p>								
<p>“Variety resulting from:</p> <p>“4.1.1 Crossing</p> <table data-bbox="443 734 1241 990"><tr><td>“(a) controlled cross (please state parent varieties)</td><td>[]</td></tr><tr><td>“(b) partially known cross (please state known parent variety(ies))</td><td>[]</td></tr><tr><td>“(c) unknown cross</td><td>[]</td></tr></table> <p>“4.1.2 Mutation [] (please state parent variety)</p> <p>“4.1.3 Discovery and development [] (please state where and when discovered and how developed)</p> <p>“4.1.4 Other []” (please provide details)”</p> <div data-bbox="443 1361 1136 1460" style="border: 1px solid black; height: 44px; width: 434px;"></div>			“(a) controlled cross (please state parent varieties)	[]	“(b) partially known cross (please state known parent variety(ies))	[]	“(c) unknown cross	[]
“(a) controlled cross (please state parent varieties)	[]							
“(b) partially known cross (please state known parent variety(ies))	[]							
“(c) unknown cross	[]							

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:						
<i>(b) Alternative 2</i>								
<p data-bbox="341 405 657 439">“Variety resulting from:</p> <p data-bbox="341 477 560 510">“4.1.1 Crossing</p> <table data-bbox="443 551 1238 734"><tr><td data-bbox="443 551 1174 622">“(a) controlled cross (please state parent varieties)</td><td data-bbox="1174 551 1238 622">[]</td></tr><tr><td data-bbox="443 622 1174 694">“(b) partially known cross (please state known parent variety(ies))</td><td data-bbox="1174 622 1238 694">[]</td></tr><tr><td data-bbox="443 694 1174 734">“(c) unknown cross</td><td data-bbox="1174 694 1238 734">[]</td></tr></table> <p data-bbox="341 772 1238 880">“4.1.2 Discovery and development [] (please state where and when discovered and how developed)</p> <p data-bbox="341 918 1251 990">“4.1.3 Other []” (please provide details)”</p> <div data-bbox="443 1037 1174 1133" style="border: 1px solid black; height: 43px; width: 458px;"></div>			“(a) controlled cross (please state parent varieties)	[]	“(b) partially known cross (please state known parent variety(ies))	[]	“(c) unknown cross	[]
“(a) controlled cross (please state parent varieties)	[]							
“(b) partially known cross (please state known parent variety(ies))	[]							
“(c) unknown cross	[]							

4.2 Method of propagating the variety

GN 31

The examples below indicate how this section can be formatted and some appropriate terms which can be used:

Example 1

“4.2.1 Seed-propagated varieties

“(a) Self-pollination []

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

“(c) Hybrid []
{...see GN 32 for example...}

“(d) Other []
(please provide details)”

“4.2.2 Vegetatively propagated varieties

{...see Example 2...} [... ..]

“4.2.3 Other []”
(please provide details)”

TECHNICAL QUESTIONNAIRE

Page {x} of {y}

Reference Number:

Example 2

“4.2.1 Vegetative propagation

“(a) cuttings []

“(b) *in vitro* propagation []

“(c) other (state method) []

“4.2.2 Seed []

“4.2.3 Other []”
(please provide details)”

GN 32

“In the case of hybrid varieties the production scheme for the hybrid should be provided on a separate sheet. This should provide details of all the parent lines required for propagating the hybrid e.g.

“*Single Hybrid*

“(… female parent …) x (… male parent …)

“*Three-Way Hybrid*

“(… female line …) x (… male line …)

“=> single hybrid used as female parent x (… male parent …)

“and should identify in particular:

“(a) any male sterile lines

“(b) maintenance system of male sterile lines.”

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
<p>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).</p>		
Characteristics	Example Varieties	Note
<p>GN 13.3 Technical Questionnaire (TQ) characteristics</p> <p>GN 13.4 Relationship between Asterisked, Grouping and TQ characteristics</p>		

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
<p>6. Similar varieties and differences from these varieties</p> <p><i>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.</i></p>			
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
GN 33 Example	<i>[e.g. Flower color]</i>	<i>[e.g. orange]</i>	<i>[e.g. orange red]</i>
<p>Comments:</p>			

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		
GN 34		
<u>Example 1</u>		
7.3.1 Main use		
(a) seed []		
(b) forage []		
(c) other []		
(please provide details)		
<u>Example 2</u>		
7.3.1 Main use		
(a) garden plant []		
(b) pot plant []		
(c) cut-flower []		
(d) other []		
(please provide details)		
ASW 16		
“A representative color photograph of the variety should accompany the Technical Questionnaire.”		

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:
<p>8. Authorization for release</p> <p>(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?</p> <p>Yes [] No []</p> <p>(b) Has such authorization been obtained?</p> <p>Yes [] No []</p> <p>If the answer to (b) is yes, please attach a copy of the authorization.</p>		

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

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

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

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

Please provide details for where you have indicated “yes”.

.....

ASW 17

“9.3 Has the plant material to be examined been tested for the presence of virus or other pathogens?”

Yes []

(please provide details as specified by the Authority)

No []”

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]