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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS  
 GENEVA

DRAFT

## HUSK TOMATO

UPOV Code: PHYSA\_IXO

*Physalis ixocarpa* Brot.

## GUIDELINES

## FOR THE CONDUCT OF TESTS

## FOR DISTINCTNESS, UNIFORMITY AND STABILITY

*prepared by experts from Mexico*

*to be considered by the Technical Committee at its forty-third session,  
 to be held in Geneva, Switzerland, from March 26 to 28, 2007*

Alternative Names:\*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Physalis ixocarpa</i> Brot., <i>Physalis philadelphica</i> Lam	Husk Tomato	Alkéenge du Mexique, Coqueret, Physalis, Tomatillo, Tomate fraise	Mexikanische Blasenkirsche, Tomatillo	Miltomate, Tomatillo, Tomate de cáscara, Tomate de hoja, Tomate verde

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 ixocarpa* Brot. ex Horm. (Syn: *Physalis philadelphica* Lam.).

## 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 or at least 7,500 seeds.

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

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

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

## 3. Method of Examination

### 3.1 *Number of Growing Cycles*

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

### 3.2 *Testing Place*

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

### 3.3 *Conditions for Conducting the Examination*

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

3.3.2 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 60 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 *Number of Plants / Parts of Plants to be Examined*

Unless otherwise indicated, all observations should be made on 30 plants or parts taken from each of 30 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 For the assessment of uniformity of cross-pollinated varieties, a population standard of 3% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 60 plants, 4 off-types **are** allowed.

4.2.3 For the assessment of uniformity of hybrids, a population standard of 2% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 60 plants, 3 off-types **are** allowed.

#### 4.3 *Stability*

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

4.3.2 Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new 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 2)
- (b) Stem: length of internodes (characteristic 4)
- (c) Stem: anthocyanin coloration of internodes (characteristic 5)
- (d) Fruit: size (characteristic 20)
- (e) Fruit: main color (at physiological maturity) (characteristic 30)
- (f) Calyx: anthocyanin coloration (characteristic 37)
- (g) Calyx: intensity of anthocyanin coloration (characteristic 38)**
- (h) Peduncle: length (characteristic 39)

- (i) Peduncle: thickness at fruit end (characteristic 40)
- (j) Fruit: number of seeds (characteristic 43)

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, MS, VG, VS: See Chapter 3.3.2

(a) to (e) 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
<b>1. VG</b> <b>(+)</b>	<b>Seedling: anthocyanin coloration of hypocotyl</b>	<b>Plantule : pigmentation anthocyanique des hypocotyles</b>	<b>Keimpflanze: Anthocyanfärbung des Hypokotyls</b>	<b>Plántula: pigmentación antociánica del hipocótilo</b>		
<b>QL (a)</b>	absent	absente	fehlend	ausente	<b>Rendidora Precoz</b>	1
	present	présente	vorhanden	presente	<b>Morada R</b>	9
<b>2. VG</b> <b>(*)</b> <b>(+)</b>	<b>Plant: growth habit</b>	<b>Plante : port</b>	<b>Pflanze: Wuchsform</b>	<b>Planta: tipo de crecimiento</b>		
<b>QN (b)</b>	upright	dressé	aufrecht	<b>erecto</b>	<b>Tamazula SM3</b>	<b>1</b>
	semi-upright	demi-dressé	halbaufrecht	semi-erecto	Diamante	<b>3</b>
	prostrate	étalé	liegend	postrado	<b>Milpero Tetela</b>	<b>5</b>
<b>3. MS/ MG</b>	<b>Stem: height at first branching</b>	<b>Tige : hauteur à la première ramification</b>	<b>Stengel: Höhe an der ersten Verzweigung</b>	<b>Tallo: altura a la primera bifurcación</b>		
<b>QN (b)</b>	short	basse	kurz	baja	<b>Salamanca</b>	3
	medium	moyenne	mittel	intermedia	<b>Tamazula SM3</b>	5
	tall	haute	lang	alta	<b>Puebla SM3</b>	7
<b>4. MS/ (*) MG</b>	<b>Stem: length of internodes</b>	<b>Tige : longueur des entre-nœuds</b>	<b>Stengel: Länge der Internodien</b>	<b>Tallo: longitud de entrenudos</b>		
<b>QN (b)</b>	short	courts	kurz	corto	<b>Salamanca</b>	3
	medium	moyens	mittel	intermedio	<b>Diamante</b>	5
	long	longs	lang	largo	<b>Tecoautla 04</b>	7
<b>5. VG</b> <b>(*)</b>	<b>Stem: anthocyanin coloration of internodes</b>	<b>Tige : pigmentation anthocyanique des entre-nœuds</b>	<b>Stengel: Anthocyanfärbung der Internodien</b>	<b>Tallo: pigmentación antociánica en los entrenudos</b>		
<b>QL (d)</b>	absent	absente	fehlend	ausente	<b>Rendidora Precoz</b>	1
	present	présente	vorhanden	presente	<b>Morada R</b>	9



	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>6.</b>	<b>VG</b> Stem: intensity of anthocyanin coloration of internodes	<b>Tige : intensité de la pigmentation anthocyanique des entre-nœuds</b>	<b>Stengel: Intensität der Anthocyanfärbung der Internodien</b>	<b>Tallo: intensidad de pigmentación antocianica en los entrenudos</b>		
<b>QN</b>	(d) weak	faible	gering	débil	Tecozautla 04	3
	medium	moyenne	mittel	media	Milpero Tetela	5
	strong	forte	stark	fuerte	Morada R	7
<b>7.</b>	<b>VG</b> Stem: pubescence of internodes	<b>Tige : pubescence des entre-nœuds</b>	<b>Stengel: Behaarung der Internodien</b>	<b>Tallo: pubescencia de los entrenudos</b>		
<b>QL</b>	(d) absent	absente	fehlend	ausente	Rendidora Precoz	1
	present	présente	vorhanden	presente	Milpero Tetela	9
<b>8.</b>	<b>VG</b> Leaf blade: shape	<b>Limbe : forme</b>	<b>Blattspreite: Form</b>	<b>Hoja: forma</b>		
(+)						
<b>PQ</b>	(d) narrow elliptic	elliptique étroit	schmal elliptisch	elíptica angosta		1
	medium elliptic	elliptique moyen	mittel elliptisch	elíptica mediaa	CHF1 Chapingo	2
	broad elliptic	elliptique large	breit elliptisch	elíptica ancha		3
<b>9.</b>	<b>MS</b> Leaf blade: length	<b>Limbe : longueur</b>	<b>Blattspreite: Länge</b>	<b>Hoja: longitud</b>		
<b>QN</b>	(d) short	court	kurz	corta	Milpero Tetela	3
	medium	moyen	mittel	mediana	Diamante	5
	long	long	lang	larga	Tecozautla 04	7
<b>10.</b>	<b>MS</b> Leaf blade: width	<b>Limbe : largeur</b>	<b>Blattspreite: Breite</b>	<b>Hoja: anchura</b>		
<b>QN</b>	(d) narrow	étroit	schmal	angosta	Rendidora Precoz	3
	medium	moyen	mittel	media	Diamante	5
	broad	large	breit	ancha	Manzano Tepetlixpa	7
<b>11.</b>	<b>VG</b> Leaf blade: dentation of margin	<b>Limbe : dentelure du bord</b>	<b>Blattspreite: Zähnung des Randes</b>	<b>Hoja: dentado del margen</b>		
(+)						
<b>QN</b>	(d) absent or weak	nulle ou faible	fehlend oder gering	ausente o débil	Rendidora Precoz	3
	medium	moyenne	mittel	media	Yema de Huevo	5
	very strong	très forte	sehr stark	muy fuerte	Tecozautla 04	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>12. VG</b>	<b>Leaf blade: color</b>	<b>Limbe : couleur</b>	<b>Blattspreite: Farbe</b>	<b>Hoja: color</b>		
<b>PQ (d)</b>	yellowish green	vert jaunâtre	gelblichgrün	verde amarillento	Yema de Huevo	1
	green	vert	grün	verde	Diamante	2
	purplish green	vert violacé	purpurgrün	verde morado	Tamazula SM3	3
<b>13. VG</b>	<b>Leaf blade: intensity of green color</b>	<b>Limbe : intensité de la couleur verte</b>	<b>Blattspreite: Intensität der Grünfärbung</b>	<b>Hoja: intensidad del color verde</b>		
<b>QN (d)</b>	weak	claire	gering	débil	Salamanca	3
	medium	moyenne	mittel	media	Puebla SM3	5
	strong	foncée	stark	fuerte	Morada R	7
<b>14. VG (+)</b>	<b>Petiole: attitude</b>	<b>Pétiole : port</b>	<b>Blattstiel: Haltung</b>	<b>Pecíolo: porte</b>		
<b>QN (d)</b>	semi-erect	demi-dressé	halbaufrecht	semi-erecto	Yema de Huevo	1
	intermediate	intermédiaire	intermediär	intermedio	Salamanca	2
	drooping	retombant	hängend	colgante	Tecoautla 04	3
<b>15. MS</b>	<b>Petiole: length</b>	<b>Pétiole : longueur</b>	<b>Blattstiel: Länge</b>	<b>Pecíolo: longitud</b>		
<b>QN (d)</b>	short	court	kurz	corto	Rendidora Precoz	3
	medium	moyen	mittel	medio	Puebla SM3	5
	long	long	lang	largo	Manzano Tepetlixpa	7
<b>16. VS</b>	<b>Flower: attitude of pedicel</b>	<b>Fleur : port du pédoncule</b>	<b>Blüte: Haltung des Blütenstiels</b>	<b>Flor: porte del pedicelo</b>		
<b>PQ (c)</b>	erect	dressé	aufrecht	erecto		1
	intermediate	intermédiaire	mittel	intermedio		3
	drooping	retombant	hängend	colgante		5
<b>17. VG</b>	<b>Flower: number of anthers</b>	<b>Fleur : nombre d'anthères</b>	<b>Blüte: Anzahl Antheren</b>	<b>Flor: número de anteras</b>		
<b>QL (c)</b>	five	cinq	fünf	cinco	Tamazula SM3	1
	more than five	plus de cinq	mehr als fünf	más de cinco	Puebla SM3	2

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
<b>18.</b>	<b>VS</b>	<b>Fruit: adherence of calyx</b>	<b>Fruit : adhérence du calice</b>	<b>Frucht: Anhaften des Kelches</b>	<b>Fruto: adherencia del cáliz</b>		
<b>QN</b>	<b>(e)</b>	weak	faible	gering	débil	<b>Puebla SM3</b>	3
		medium	moyenne	mittel	media	Diamante	5
		strong	forte	stark	fuerte	<b>CHF1 Chapingo</b>	7
<b>19.</b>	<b>VG/ MS</b>	<b>Flower: diameter</b>	<b>Fleur : diamètre</b>	<b>Blüte: Durchmesser</b>	<b>Flor: diámetro</b>		
<b>QN</b>	<b>(d)</b>	<b>small</b>	petit	klein	pequeño	<b>Milpero Tetela</b>	3
		<b>medium</b>	moyen	mittel	medio	<b>Manzano Tepetlixpa</b>	5
		<b>large</b>	grand	groß	grande	<b>Yema de Huevo</b>	7
<b>20.</b>	<b>VG (* )</b>	<b>Fruit: size</b>	<b>Fruit : taille</b>	<b>Frucht: Größe</b>	<b>Fruto: tamaño</b>		
<b>QN</b>	<b>(d)</b>	small	petit	klein	pequeño	Milpero Tetela	1
		medium	moyen	mittel	mediano	<b>Tamazula SM3</b>	3
		large	grand	groß	grande	<b>Diamante</b>	5
		very large	très grand	sehr groß	muy grande	<b>Tecoautla 04</b>	7
<b>21.</b>	<b>MS</b>	<b>Fruit: length</b>	<b>Fruit : longueur</b>	<b>Frucht: Länge</b>	<b>Fruto: longitud</b>		
<b>QN</b>	<b>(d)</b>	short	court	kurz	corta	Milpero Tetela	3
		medium	moyen	mittel	media	<b>CHF1 Chapingo</b>	5
		long	long	lang	larga	<b>Tecoautla 04</b>	7
<b>22.</b>	<b>MS</b>	<b>Fruit: diameter</b>	<b>Fruit : diamètre</b>	<b>Frucht: Durchmesser</b>	<b>Fruto: diámetro</b>		
<b>QN</b>	<b>(d)</b>	<b>narrow</b>	étroit	schmal	estrecho	Milpero Tetela	3
		medium	moyen	mittel	medio	<b>CHF1 Chapingo</b>	5
		broad	large	breit	ancho	<b>Tecoautla 04</b>	7
<b>23.</b>	<b>MS</b>	<b>Fruit: ratio length/diameter</b>	<b>Fruit : rapport longueur/diamètre</b>	<b>Frucht: Verhältnis Länge/Breite</b>	<b>Fruto: relación largo/diámetro</b>		
<b>QN</b>	<b>(d)</b>	small	petit	klein	pequeña	Diamante	3
		medium	moyen	mittel	media	Milpero Tetela	5
		large	grand	groß	grande	Salamanca	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>24.</b>	<b>VG</b>	<b>Fruit: shape in longitudinal section</b>	<b>Fruit : forme en section longitudinale</b>	<b>Frucht: Form im Längsschnitt</b>	<b>Fruto: forma en sección longitudinal</b>	
(+)						
<b>PQ</b>	<b>(d)</b>	<b>oblate</b>	aplatis	breitrund	aplanada	1
		<b>circular</b>	circulaire	kreisförmig	circular	2
		<b>cordate</b>	cordiforme	herzförmig	cordiforme	3
		<b>triangular</b>	triangulaire	dreieckig	triangular	4
<b>25.</b>	<b>VG</b>	<b>Fruit: shape in cross section</b>	<b>Fruit : forme en section transversale</b>	<b>Frucht: Form im Querschnitt</b>	<b>Fruto: forma en sección transversal</b>	
(+)						
<b>PQ</b>	<b>(d)</b>	<b>elliptic</b>	elliptique	elliptisch	elíptica	1
		<b>circular</b>	circulaire	kreisförmig	circular	<b>CHF1 Chapingo</b> 2
		<b>angular</b>	anguleux	winklig	angular	3
<b>26.</b>	<b>VG</b>	<b>Fruit: depth of stalk cavity</b>	<b>Fruit : profondeur de la cavité du pédoncule</b>	<b>Frucht: Tiefe der Stielhöhle</b>	<b>Fruto: profundidad de la cavidad peduncular</b>	
(+)						
<b>QN</b>	<b>(d)</b>	<b>absent or very shallow</b>	nulle ou très peu profonde	fehlend oder sehr flach	ausente o muy poco profunda	1
		shallow	peu profonde	flach	poco profunda	3
		medium	moyenne	mittel	media	5
		deep	profonde	tief	profunda	7
<b>27.</b>	<b>VS</b>	<b>Fruit: shape of apex</b>	<b>Fruit : forme du sommet</b>	<b>Frucht: Form der Spitze</b>	<b>Fruto: forma del ápice</b>	
(+)						
<b>PQ</b>	<b>(d)</b>	pointed	pointu	zugespitzt	puntiaguda	1
		rounded	arrondi	abgerundet	redondeada	<b>Milpero Tetela</b> 2
		depressed	déprimé	eingesenkt	hendida	3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
28.	<b>VG</b> <b>Fruit: main color (at harvest maturity)</b>	<b>Fruit : couleur principale (à maturité de récolte)</b>	<b>Frucht: Hauptfarbe (zum Zeitpunkt der Erntereife)</b>	<b>Fruto: color principal (en la madurez para la cosecha)</b>		
PQ	(d) <b>white</b>	blanc	weiß	blanco	<b>Mutante</b>	1
	<b>green</b>	vert	grün	verde	<b>Rendidora Precoz</b>	2
	<b>yellow</b>	jaune	gelb	amarillo	<b>Manzano Tepetlixpa</b>	3
	<b>orange</b>	orange	orange	anaranjado	<b>Yema de Huevo</b>	4
	<b>purple</b>	pourpre	purpurn	morado	<b>Tamazula SM3</b>	5
29.	<b>VG</b> <b>Fruit: intensity of main color (at harvest maturity)</b>	<b>Fruit : intensité de la couleur principale (à maturité de récolte)</b>	<b>Frucht: Intensität der Hauptfarbe (zum Zeitpunkt der Erntereife)</b>	<b>Fruto: intensidad del color (en la madurez para la cosecha)</b>		
(+)						
QN	(d) <b>light</b>	claire	hell	claro		1
	<b>intermediate</b>	intermédiaire	mittel	medio		2
	<b>dark</b>	foncée	dunkel	oscuro		3
30	<b>VG</b> <b>Fruit: main color (at physiological maturity)</b>	<b>Fruit : couleur principale (à maturité physiologique)</b>	<b>Frucht: Hauptfarbe (zum Zeitpunkt der physiologischen Reife)</b>	<b>Fruto: color principal (en la madurez fisiológica.)</b>		
(*)						
PQ	(e) <b>white</b>	blanc	weiß	blanco	<b>Mutante</b>	1
	<b>green</b>	vert	grün	verde	<b>Rendidora Precoz</b>	2
	<b>yellow</b>	jaune	gelb	amarillo	<b>Manzano Tepetlixpa</b>	3
	<b>orange</b>	orange	orange	anaranjado	<b>Yema de Huevo</b>	4
	<b>purple</b>	pourpre	purpurn	morado	<b>Tamazula SM3</b>	5
31.	<b>VG</b> <b>Fruit: intensity of main color (at physiological maturity)</b>	<b>Fruit : intensité de la couleur principale (à maturité physiologique)</b>	<b>Frucht: Intensität der Hauptfarbe (zum Zeitpunkt der physiologischen Reife)</b>	<b>Fruto: intensidad del color principal (en la madurez fisiológica.)</b>		
(+)						
QN	(e) light	claire	hell	débil		1
	intermediate	intermédiaire	mittel	media		2
	dark	foncée	dunkel	fuerte		3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
<b>32.</b>	<b>VG</b>	<b>Fruit: color of flesh</b>	<b>Fruit : couleur de la chair</b>	<b>Frucht: Farbe des Fleisches</b>	<b>Fruto: color de la pulpa</b>		
<b>PQ</b>	(e)	white	blanc	weiß	blanco	Mutante	1
		yellow	jaune	gelb	amarillo	Manzano Tepetlixpa	2
		greenish yellow	jaune verdâtre	grünlichgelb	amarillo verdoso	CHF1 Chapingo	3
		green	vert	grün	verde	Puebla SM3	4
		purplish green	vert violacé	purpurgrün	verde morado	Tamazula SM3	5
		purple	pourpre	purpurn	morado	Morada R	6
<b>33.</b>	<b>MS</b>	<b>Fruit: predominant number of locules</b>	<b>Fruit : nombre prédominant de loges</b>	<b>Frucht: vorwiegende Anzahl Kernkammern</b>	<b>Fruto: número predominante de lóculos</b>		
<b>QN</b>	(e)	two	deux	zwei	dos		1
		three	trois	drei	tres		2
		four	quatre	vier	cuatro		3
		five	cinq	fünf	cinco		4
		more than five	plus de cinq	mehr als fünf	más de cinco		5
<b>34.</b>	<b>VS</b>	<b>Fruit: enclosure of calyx</b>	<b>Fruit : position du calice</b>	<b>Frucht: Umhüllung des Kelches</b>	<b>Fruto: cobertura del cáliz</b>		
(+)							
<b>QN</b>	(e)	widely open	largement ouvert	weit offen	muy abierta	Puebla SM3	1
		slightly open	faiblement ouvert	etwas offen	ligeramente abierta	Tecozautla 04	2
		fully enclosed	complètement fermé	vollständig umhüllt	completamente cerrada	CHF1 Chapingo	3
<b>35.</b>	<b>VG</b>	<b>Calyx: pubescence</b>	<b>Calice : pubescence</b>	<b>Kelch: Behaarung</b>	<b>Cáliz: pubescencia</b>		
(+)							
<b>QN</b>	(d)	absent	absentes	fehlend	ausent	Rendidora Precoz	1
		present	présentes	vorhanden	presente	Salamanca	9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
<b>36.</b>	<b>VG</b>	<b>Calyx: ribbing</b>	<b>Calice : nervures</b>	<b>Kelch: Rippung</b>	<b>Cáliz: acostillado</b>		
	(+)						
<b>QL</b>	<b>(d)</b>	absent	absentes	fehlend	ausente	<b>CHF1 Chapingo</b>	1
		present	présentes	vorhanden	presente	<b>Puebla SM3</b>	9
<b>37.</b>	<b>VG</b>	<b>Calyx: anthocyanin coloration</b>	<b>Calice : pigmentation anthocyanique</b>	<b>Kelch. Anthocyanfärbung</b>	<b>Cáliz: pigmentación antociánica</b>		
<b>QL</b>	<b>(e)</b>	absent	absente	fehlend	ausente	<b>CHF1 Chapingo</b>	1
		present	présente	vorhanden	presente	<b>Tamazula SM3</b>	9
<b>38.</b>	<b>VG</b>	<b>Calyx: intensity of anthocyanin coloration</b>	<b>Calice : intensité de la pigmentation anthocyanique</b>	<b>Kelch: Intensität der Anthocyanfärbung</b>	<b>Cáliz: intensidad de la pigmentación antociánica</b>		
<b>PQ</b>	<b>(e)</b>	weak	faible	gering	débil	<b>Manzano Tepetlixpa</b>	3
		medium	moyenne	mittel	media	<b>Salamanca</b>	5
		strong	forte	stark	fuerte	<b>Morada R</b>	7
		very strong	très forte	sehr stark	muy fuerte	Tamazula SM3	9
<b>39.</b>	<b>MS</b>	<b>Peduncle: length</b>	<b>Pédoncule : longueur</b>	<b>Blütenstiel</b>	<b>Pedúnculo: longitud</b>		
<b>QN</b>	<b>(d)</b>	short	court	kurz	corto	<b>Milpero Tetela</b>	3
		medium	moyen	mittel	medio	<b>Diamante</b>	5
		long	long	lang	largo	<b>Puebla SM3</b>	7
<b>40.</b>	<b>MS</b>	<b>Peduncle: thickness at fruit end</b>	<b>Pédoncule : épaisseur à l'extrémité du fruit</b>	<b>Blütenstiel: Dicke am Fruchtende</b>	<b>Pedúnculo: grosor en el extremo proximal</b>		
<b>QN</b>	<b>(d)</b>	thin	fin	dünn	delgado	<b>Milpero Tetela</b>	3
		medium	moyen	mittel	intermedio	<b>Diamante</b>	5
		thick	épais	dick	grueso	<b>Tecozautla 04</b>	7
<b>41.</b>	<b>VS</b>	<b>Fruit: firmness</b>	<b>Fruit : fermeté</b>	<b>Frucht: Festigkeit</b>	<b>Fruto: firmeza</b>		
	(+)						
<b>QN</b>	<b>(d)</b>	soft	mou	weich	blanda	<b>Rendidora Precoz</b>	3
		medium	moyen	mittel	mediana	<b>Diamante</b>	5

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
	<b>firm</b>	ferme	fest	firme	<b>Tamazula SM3</b>	7
<b>42. MG (+)</b>	<b>Fruit: density of flesh (ratio weight/volume)</b>	<b>Fruit : densité de la chair (rapport poids/volume)</b>	<b>Frucht: Dichte des Fleisches (Verhältnis Gewicht/Volumen)</b>	<b>Fruto: densidad de la pulpa (relación peso/volumen)</b>		
<b>QN (d)</b>	<b>low</b>	faible	gering	baja	<b>Milpero Tetela</b>	3
	<b>medium</b>	moyenne	mittel	media	<b>Diamante</b>	5
	<b>high</b>	forte	hoch	alta	<b>Yema de Huevo</b>	7
<b>43. MS (*)</b>	<b>Fruit: number of seeds</b>	<b>Fruit : nombre de graines</b>	<b>Frucht: Anzahl Samen</b>	<b>Fruto: número de semillas</b>		
<b>QN (e)</b>	few	petit	gering	pocas	<b>Milpero Tetela</b>	3
	medium	moyen	mittel	medio	<b>Manzano Tepetlixpa</b>	5
	many	grand	groß	muchas	<b>Puebla SM3</b>	7
<b>44. VG PQ (e)</b>	<b>Seed: color</b>	<b>Graine : couleur</b>	<b>Samen: Farbe</b>	<b>Semilla: color</b>		
	<b>yellow</b>	jaune	gelb	amarillo	<b>Puebla SM3</b>	1
	<b>brown yellow</b>	jaune brunâtre	braungelb	amarillo pardo	<b>Rendidora Precoz</b>	2
<b>45. VG QN (e)</b>	<b>Seed: size</b>	<b>Graine : taille</b>	<b>Samen: Größe</b>	<b>Semilla: tamaño</b>		
	small	petite	klein	pequeño	<b>Tamazula SM3</b>	3
	medium	moyenne	mittel	medio	<b>Yema de Huevo</b>	5
	large	grande	groß	grande	<b>Tecozautla 04</b>	7
<b>46. MG (+)</b>	<b>Time of flowering</b>	<b>Époque de floraison</b>	<b>Zeitpunkt der Blüte</b>	<b>Tiempo a floración</b>		
<b>QN (a)</b>	early	précoce	früh	precoz	<b>CHF1 Chapingo</b>	3
	medium	moyenne	mittel	media	<b>Diamante</b>	5
	late	tardive	spät	tardía	<b>Puebla SM3</b>	7



	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
<b>47.</b>	<b>MG</b>	<b>Time of harvest maturity</b>	<b>Époque de maturité de récolte</b>	<b>Zeitpunkt der Erntereife</b>	<b>Fruto: Época de madurez comercial</b>		
(+)							
<b>QN</b>	<b>(d)</b>	early	précoce	früh	precoz	<b>Yema de Huevo</b>	3
		medium	moyenne	mittel	media	<b>Tecozautla 04</b>	5
		late	tardive	spät	tardía	<b>Salamanca</b>	7
<b>48.</b>	<b>MG</b>	<b>Time of physiological maturity</b>	<b>Époque de maturité physiologique</b>	<b>Zeitpunkt der physiologischen Reife</b>	<b>Fruto: época de madurez fisiológica</b>		
(+)							
<b>QN</b>	<b>(e)</b>	early	précoce	früh	precoz	<b>CHF1 Chapingo</b>	3
		medium	moyenne	mittel	media	<b>Tamazula SM3</b>	5
		late	tardive	spät	tardía	<b>Cerro Gordo</b>	7
<b>49.</b>	<b>MG</b>	<b>Shelf life (beginning test at harvest maturity)</b>	<b>Durée de conservation (en commençant le test à maturité de récolte)</b>	<b>Haltbarkeit: (Beginn der Prüfung zum Zeitpunkt der Erntereife)</b>	<b>Vida útil (inicio del ensayo en la época de madurez para la cosecha)</b>		
(+)							
<b>QN</b>		short	courte	kurz	corta	<b>Manzano Tepetlixpa</b>	3
		medium	moyenne	mittel	intermedia	<b>Tecozautla 04</b>	5
		long	longue	lang	larga	<b>Tamazula SM3</b>	7

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) Characteristics which should be examined on the seedling.
- (b) Characteristics which should be examined when flowering begins at the fifth node of the four principal branches.
- (c) Characteristics which should be examined at flowering (see Ad. 46). For flower measurements, take at least one of the first three nodes (see Fig. 1).
- (d) Characteristics which should be examined at harvest maturity (see Ad. 47). For flower measurements, take at least one of the first three nodes (see Fig. 1).
- (e) Characteristics which should be examined at physiological maturity (see Ad. 48). For flower measurements, take at least one of the first three nodes (see Fig. 1).



Figure 1. First three nodes of a plant.

8.2 *Explanations for individual characteristics*

Ad. 1: Seedling: anthocyanin coloration of hypocotyls.

This characteristic refers to the plant right before the development of the first true leaf.

Ad. 2: Plant: growth habit



1  
upright



3  
semi-upright



5  
prostrate

Ad. 8: Leaf blade: shape



1  
narrow elliptic



2  
medium elliptic



3  
broad elliptic

Ad. 11: Leaf blade: dentation of margin



1  
absent or weak



2  
medium



3  
strong

Ad. 14: Petiole: attitude



1  
semi-erect

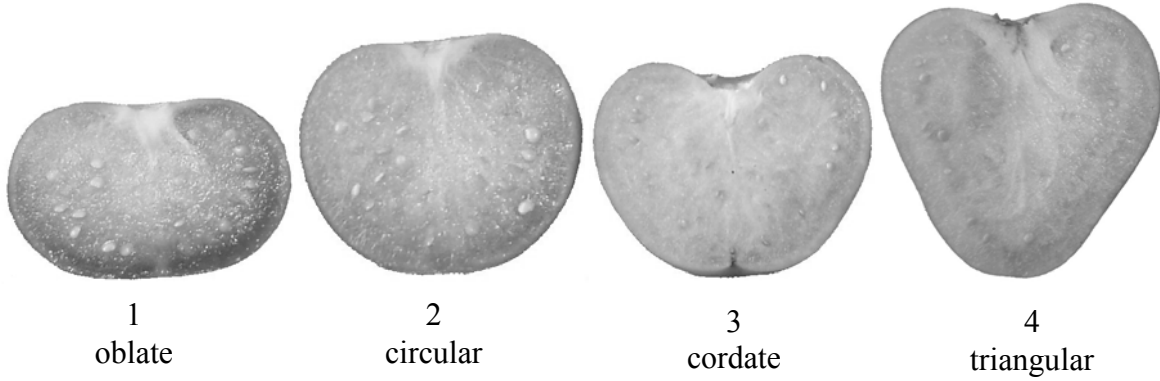


2  
intermediate

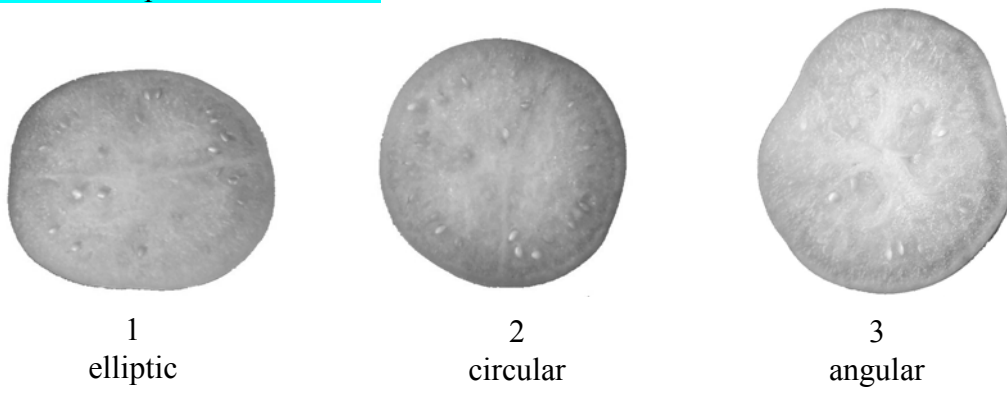


3  
drooping

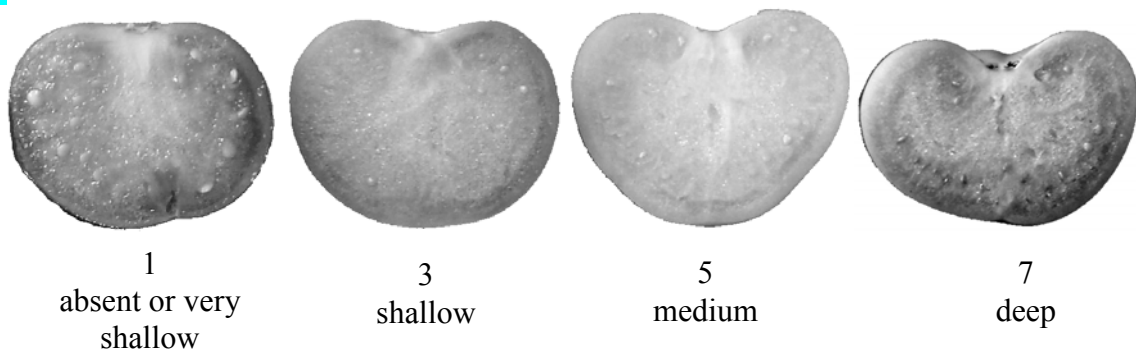
**Ad. 24: Fruit: shape in longitudinal section**



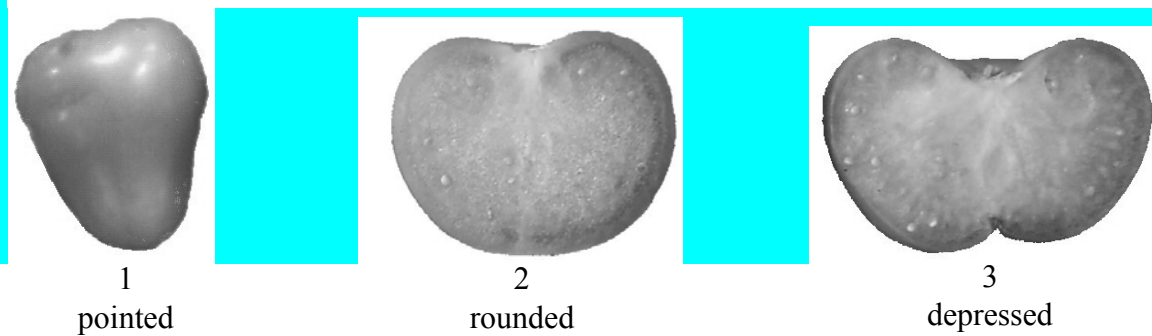
**Ad. 25: Fruit: shape in cross section**



**Ad. 26: Fruit: depth of stalk cavity**



**Ad. 27: Fruit: shape of apex**



Ad. 29: Fruit: intensity of main color (at harvest maturity)

The intensity of color in the example variety of characteristic 28 must be considered as the intermediate state of expression for each color.

Ad. 31: Fruit: intensity of main color (at physiological maturity)

The intensity of color in the example variety of characteristic 30 must be considered as the intermediate state of expression for each color.

Ad. 34: Fruit: enclosure of calyx



1  
widely open



2  
slightly open



3  
fully enclosed

Ad. 36: Calyx: ribbing



1  
absent



9  
present

Ad. 41: Fruit: firmness

This characteristic must be evaluated by comparing and contrasting the firmness of the evaluating variety against the example varieties, using the index finger and the thumb.

Ad. 42: Fruit: density of flesh (ratio weight/volume)

This characteristic must be evaluated by weighting three 10 fruit samples and measuring their volume by water displacement. The ratio weight/volume must be calculated by division.

Ad. 46: Time of flowering

This is the time at which half of the plants has at least one open flower.

Ad. 47: Time of harvest maturity

This is the time at which the fruit stops its growth.

Ad. 48: Time of physiological maturity

The time of physiological maturity is when the seed color changes from white to another color.

Ad. 49: Shelf life (beginning test at harvest maturity)

The test begins at harvest maturity. One fruit from each plant in each replication and environment must be harvested and the 10 fruits of each replication must be put in a polyethylene bag. The whole bags must be stored inside. The classification must be done by comparing and contrasting the evaluating variety against the example varieties, verifying the shelf life of each variety.

## 9. Literature

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10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights		
1. Subject of the Technical Questionnaire		
1.1 Botanical name	<input type="text" value="Physalis ixocarpa Brot."/>	
1.2 Common Name	<input type="text" value="Husk Tomato"/>	
2. Applicant		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	
Fax No.	<input type="text"/>	
E-mail address	<input type="text"/>	
Breeder (if different from applicant)	<input type="text"/>	
3. Proposed denomination and breeder's reference		
Proposed denomination (if available)	<input type="text"/>	
Breeder's reference	<input type="text"/>	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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4. Information on the breeding scheme and propagation of the variety

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 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  [ ]
- (c) Hybrid  [ ]
- (d) Other  [ ]  
(please provide details)

4.2.2 Other  [ ]  
(please provide details)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

Characteristics	Example Varieties	Note
<b>5.1 Plant: growth habit</b> <b>(2)</b>		
upright	Tamazula SM3	1[ ]
semi-upright	Diamante	3[ ]
prostrate	Milpero Tetela	5[ ]
<b>5.2 Stem: length of internodes</b> <b>(4)</b>		
short	Salamanca	3[ ]
medium	Tamazula SM3	5[ ]
long	Puebla SM3	7[ ]
<b>5.3 Stem: anthocyanin coloration of internodes</b> <b>(5)</b>		
absent	Rendidora Precoz	1[ ]
present	Morada R	9[ ]
<b>5.4 Fruit: size</b> <b>(20)</b>		
small	Milpero Tetela	1[ ]
medium	Tamazula SM3	3[ ]
large	Diamante	5[ ]
very large	Tecozautla 04	7[ ]
<b>5.5 Fruit: main color (at harvest maturity)</b> <b>(28)</b>		
white	Mutante	1[ ]
green	Rendidora Precoz	2[ ]
yellow	Manzano Tepetlixpa	3[ ]
orange	Yema de Huevo	4[ ]
purple	Tamazula SM3	5[ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
<b>5.6 Calyx: anthocyanin coloration</b> (37)		
absent	CHF1 Chapingo	1[ ]
present	Tamazula SM3	9[ ]
<b>5.7 Peduncle: length</b> (39)		
short	Milpero Tetela	3[ ]
medium	Diamante	5[ ]
long	Puebla SM3	7[ ]
<b>5.8 Peduncle: thickness at fruit end</b> (40)		
thin	Milpero Tetela	3[ ]
medium	Diamante	5[ ]
thick	Tecoquantla 04	7[ ]
<b>5.9 Fruit: number of seeds</b> (43)		
few	Milpero Tetela	3[ ]
medium	Manzano Tepetlixpa	5[ ]
many	Puebla SM3	7[ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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6. Similar varieties and differences from these varieties

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

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the <b>similar</b> variety(ies)	Describe the expression of the characteristic(s) for <b>your</b> candidate variety
<i>Example</i>	<i>Fruit: main color (at physiological maturity)</i>	<i>yellow</i>	<i>orange</i>

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#7. Additional information which may help in the examination of the variety

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

Yes [ ] No [ ]

(If yes, please provide details)

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

A representative color photograph of the fruit of the variety should accompany the Technical Questionnaire.

8. Authorization for release

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

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

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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 of where you have indicated "yes".

.....

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