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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

GOJI

UPOV Code(s): LYCIU_BAR

Lycium barbarum L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

*prepared by experts from China
to be considered by the
Technical Working Party for Fruit Crops
at its fifty-first session, to be held in Nîmes, France,
from 2020-07-06 to 2020-07-10*

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	English	French	German	Spanish
<i>Lycium barbarum</i> L., <i>Lycium halimifolium</i> Mill., <i>Lycium vulgare</i> Dunal	Barbary matrimony- vine, Chinese boxthorn, Chinese wolfberry, Duke of Argyll's teaplant, Duke of Argyll's teatree, Himalayan goji, Tibetan goji, goji-berry, Matrimony-vine		Bocksdorn	

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 *Lycium barbarum* 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 rooted cuttings.

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

vegetatively propagated varieties: 10 rooted 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*

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

3.1.2 The two independent growing cycles may be observed from a single planting, examined in two separate growing cycles.

3.1.3 In particular, it is essential that the plants produce a satisfactory crop of fruit in each of the two growing cycles.

3.1.4 The growing cycle is considered to be the duration of a single growing season, beginning with bud burst (flowering and/or vegetative), flowering and fruit harvest and concluding when the following dormant period ends with the swelling of new season buds.

3.1.5 The testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.

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 Because daylight varies, color determinations made against a color chart should be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room without direct sunlight. The spectral distribution of the illuminant for artificial daylight should conform with the CIE Standard of Preferred Daylight D 6500 and should fall within the tolerances set out in the British Standard 950, Part I. These determinations should be made with the plant part placed against a white background. The color chart and version used should be specified in the variety description.

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 10 plants.

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.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 1.

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 10 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 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) Fruit: shape in lateral view (characteristic 17)
- (b) Fruit: color (characteristic 18)
 - Gr. 1: white
 - Gr. 2: yellow
 - Gr. 3: red
 - Gr. 4: purple

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)-(e) 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	MG/VG	(a)			
	Current-year branch: length					
	short					1
	short to medium					2
	medium				Ningqi 1 Hao	3
	medium to long					4
	long					5
2. (*)	QN	MG/VG	(b)			
	Current-year branch: length of internode					
	short					1
	medium					2
	long				Ningqi 1 Hao	3
3.	QL	VG	(b)			
	Current-year branch: presence of spines					
	absent					1
	present					9
4.	PQ	VG	(b)			
	Only for varieties with present spines: Current-year branch: density of spines					
	sparse				Ningqi 1 Hao	1
	medium					2
	dense					3
5. (*)	QN	MS/VG	(+)	(b)		
	Current - year branch: number of fruits					
	very few					1
	very few to few					2
	few				Ningqi 5 Hao	3
	few to medium					4
	medium				Ningnongqi 9 Hao	5
	medium to many					6
	many					7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6.	PQ VG	(a)				
	Three-year-old branch: color					
	medium brown				Ningqi 5 Hao	1
	dark brown				Ningqi 1 Hao	2
	yellow brown				Ningqi 7 Hao	3
	grey brown				Ningnongqi 9 Hao	4
7. (*)	QN MG/MS/VG	(+)	(c)			
	Leaf blade: length					
	short					1
	medium				Ningqi 1 Hao	3
	long					5
8. (*)	QN MS/VG	(+)	(c)			
	Leaf blade: width					
	narrow					1
	medium				Ningqi 1 Hao	2
	broad					3
9.	QN MS/VS	(c)				
	Leaf blade: thickness					
	thin					1
	medium				Ningqi 1 Hao	2
	thick					3
10. (*)	PQ VG	(+)	(c)			
	Leaf: shape					
	linear					1
	lanceolate				Ningqi 7 Hao	2
	ovate					3
11.	QN VG	(c)				
	Leaf blade: intensity of green color					
	light				Mengqi 1 Hao	1
	medium				Ningqi 1 Hao	2
	dark				Ningqicai 1 Hao	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12.	PQ VG	(+) (c)				
	Leaf blade: shape of apex					
	narrow acute				Ningqi 5 Hao	1
	medium acute				Ningqi 1 Hao	2
	obtuse				Ningqi 7 Hao	3
	rounded					4
13.	QN MG/VG	(+) (d)				
	Corolla: tube length					
	short					1
	medium				Ningqicai 1 Hao	2
	long					3
14.	QL VG	(d)				
	Corolla: lobe color					
	white				Baihua 2015	1
	purple				Ningqicai 1 Hao	2
15.	QN MG/MS/VG	(+) (e)				
	Fruit: length					
	very short					1
	short					2
	medium				Ningnongqi 9 Hao	3
	long					4
	very long					5
16. (*)	QN MG/MS/VG	(+) (e)				
	Fruit: width					
	narrow					1
	medium				Ningqi 1 Hao	2
	broad					3
17. (*)	PQ VG	(+) (e)				
	Fruit: shape in lateral view					
	ovate					1
	oblate				Ningqi 7 Hao	2
	circle				Ningnongqi 5 Hao	3
	elliptic				Ningnongqi 4 Hao	4
	obovate					5

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
18. (*)	PQ MG/VG	(e)				
	Fruit: color					
	RHS colour chart					
19. (*)	PQ VG/VS	(e)				
	Fruit: taste					
	none				Ningqi 5 Hao	1
	bitter				Ningqi 1 Hao	2
	sweet				Ningqi 7 Hao	3

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 should be made on the long fruiting branch, when the fruits have ripened
- (b) Observations should be made on the middle third of long current-year fruiting branch.
- (c) Observations should be made on fully developed leaves taken from the middle third of current-year-fruiting branch.
- (d) Observations should be made on the fully bloomed flowers taken from the middle third of current-year-fruiting branch.
- (e) Observations should be made on the ripened fruits taken from the middle third of current year

8.2 *Explanations for individual characteristics*

Ad. 5: Current - year branch: number of fruits



3
few

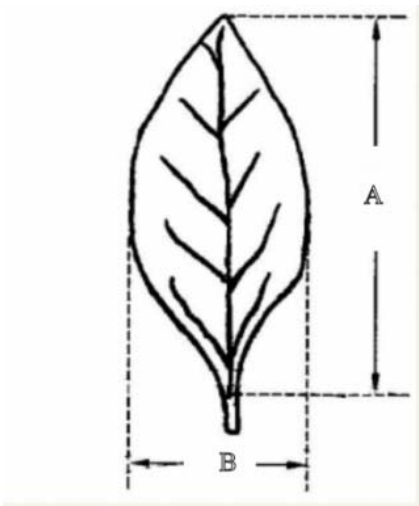


5
medium



7
many

Ad. 7: Leaf blade: length

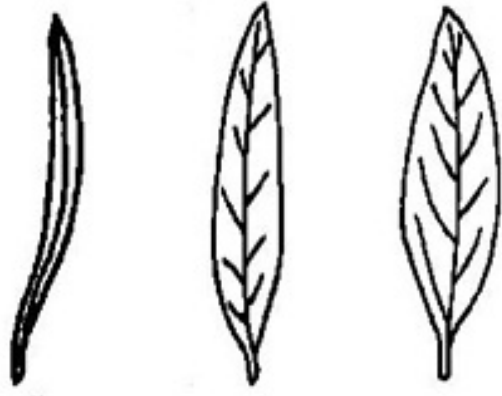


A= Plant: Length
B= Plant: width

Ad. 8: Leaf blade: width

See Ad. 7.

Ad. 10: Leaf: shape



1
linear

2
lanceolate

3
ovate

Ad. 12: Leaf blade: shape of apex



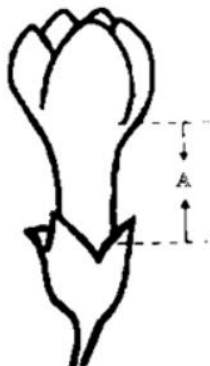
1 narrow acute

2 medium acute

3 obtuse

4 rounded

Ad. 13: Corolla: tube length



A= Corolla tube: length

Ad. 15: Fruit: length



A= Fruit: length
 B= Fruit: width

Ad. 16: Fruit: width

See Ad.15.

Ad. 17: Fruit: shape in lateral view

		← broadest part →		
		(below middle)	(at middle)	(above middle)
broad(low) ← width (ratio length/width) → narrow (high)	 1 cordate	 4 elliptic	 5 obovate	
	 3 circular			
	 2 oblate			

9. Literature

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="Lycium barbarum L."/>
1.2	Common name	<input type="text" value="Barbary matrimony-vine, Chinese boxthorn, Chinese wolfberry, Duke of Argyll's teaplant, Duke of Argyll's teatree, Himalayan goji, Tibetan goji, goji-berry, Matrimony-vine"/>
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 variety)

(.....) x (.....)

female parent

male parent

(b) partially known cross []

(please state known parent variety(ies))

(.....) x (.....)

female parent

male parent

(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)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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4.2	Method of propagating the variety	
4.2.1	Vegetative propagation	
(a)	Cuttings	[]
(b)	<i>In vitro</i> propagation	[]
(c)	Other (state method)	[]
	<input type="text"/>	
4.2.2	Other (Please provide details)	[]
	<input type="text"/>	

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
5.1 Current-year branch: length of internode (2)		
short		1 []
medium		2 []
long	Ningqi 1 Hao	3 []
5.2 Current - year branch: number of fruits (5)		
very few		1 []
very few to few		2 []
few	Ningqi 5 Hao	3 []
few to medium		4 []
medium	Ningnongqi 9 Hao	5 []
medium to many		6 []
many		7 []
5.3 Leaf blade: length (7)		
short		1 []
short to medium		2 []
medium	Ningqi 1 Hao	3 []
medium to long		4 []
long		5 []
5.4 Leaf blade: width (8)		
narrow		1 []
medium	Ningqi 1 Hao	2 []
broad		3 []
5.5 Leaf: shape (10)		
linear		1 []
lanceolate	Ningqi 7 Hao	2 []
ovate		3 []

Characteristics	Example Varieties	Note
5.6 Fruit: width (16)		
narrow		1 []
medium	Ningqi 1 Hao	2 []
broad		3 []
5.7 Fruit: shape in lateral view (17)		
ovate		1 []
oblate	Ningqi 7 Hao	2 []
circle	Ningnongqi 5 Hao	3 []
elliptic	Ningnongqi 4 Hao	4 []
obovate		5 []
5.8 Fruit: color (18)		
RHS colour chart		
5.9 Fruit: taste (19)		
none	Ningqi 5 Hao	1 []
bitter	Ningqi 1 Hao	2 []
sweet	Ningqi 7 Hao	3 []
5.10 Fruit: color		
white		1 []
red		2 []
yellow		3 []
purple		4 []

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	Characteristic(s) in which your candidate variety differs	Describe the expression of the characteristic(s) for the	Describe the expression of the characteristic(s) for your
<i>Example</i>			
<p>Comments:</p>			

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 variety displaying its main distinguishing feature(s), should accompany the Technical Questionnaire. The photograph will provide a visual illustration of the candidate variety which supplements the information provided in the Technical Questionnaire.

The key points to consider when taking a photograph of the candidate variety are:

- Indication of the date and geographic location
- Correct labeling (breeder's reference)
- Good quality printed photograph (minimum 10 cm x 15 cm) and/or sufficient resolution electronic format version (minimum 960 x 1280 pixels)"

Further guidance on providing photographs with the Technical Questionnaire is available in document TGP/7 "Development of Test Guidelines", Guidance Note 35 (<http://www.upov.int/tgp/en/>).

[The link provided may be deleted by members of the Union when developing authorities' own test guidelines.]

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