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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

SCORPION WEED

UPOV Code(s): PHACE_TAN

Phacelia tanacetifolia Benth.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from Poland
to be considered by the
Technical Committee
at its meeting, to be held in Geneva,
from 2017-04-03 to 2017-04-05

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Phacelia tanacetifolia Benth.	Scorpion Weed, California Bluebell	Phacélie à feuilles de tanaisie	Phazelie	Phazelia

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 *Phacelia tanacetifolia* Benth..

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:

500 g of seed

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should, be stated by the applicant.

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.

3.2 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 optimum stage of development for the assessment of each characteristic is indicated by a number in the second column of the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 200 plants, which should be divided between at least 2 replicates.

3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 Additional Tests

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

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

4.1.2 Consistent Differences

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

4.1.3 Clear Differences

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

4.1.4 Number of plants or parts of plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 40 plants or parts of plants taken from each of 40 plants and any other observations made on all plants in the test, disregarding any off-type plants.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the second column of the Table of Characteristics (see document TGP/9 “Examining Distinctness”, Section 4 “Observation of characteristics”):

MG: single measurement of a group of plants or parts of plants
MS: measurement of a number of individual plants or parts of plants
VG: visual assessment by a single observation of a group of plants or parts of plants
VS: visual assessment by observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

“Visual” observation (V) is an observation made on the basis of the expert’s judgment. For the purposes of this document, “visual” observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, “G” provides a single record per variety and it is not possible or

necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

4.2 Uniformity

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

4.2.2 The assessment of uniformity 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 further examined by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

(a) Ploidy (characteristic 1)
(b) Time of beginning of flowering (characteristic 3)
(c) Plant: natural height (characteristic 4)
(d) Flower: color (characteristic 8)

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 8.1

6 Not applicable

7 Growth stage key See Explanations on the Table of Characteristics in Chapter 8

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. (*) QL VG		**(+)**				
	Ploidy	**Ploïdie**	**Ploidie**	**Ploidía**		
	diploid	diploïde	diploid	diploide	Amerigo, Lisette, Oka, Wolga	2
	tetraploid	tétraploïde	tetraploid	tetraploide		4
2. QN VG			**35-39**			
	Leaf: intensity of green color	**Feuille : intensité de la couleur verte**	**Blatt: Intensität der Grünfärbung**	**Hoja: intensidad del color verde**		
	light	faible	hell	claro		1
	medium	moyenne	mittel	intermedio	Lisette	2
	dark	forte	dunkel	oscuro	Balo	3
3. (*) QN MG		**(+)**				
	Time of beginning of flowering	**Époque de début de floraison**	**Zeitpunkt des Blühbeginns**	**Época de comienzo de la floración**		
	early	précoce	früh	temprana	Barcelia, Lilla	3
	medium	moyenne	mittel	intermedia	Amerigo, Anabela	5
	late	tardive	spät	tardía	Beehappy	7
4. (*) QN VG		**(+)**	**62-65**			
	Plant: natural height	**Plante : hauteur naturelle**	**Pflanze: Natürliche Höhe**	**Planta: altura natural**		
	short	basse	niedrig	corta	Asta	1
	medium	moyenne	mittel	mediana	Anabela, Lilla, Natra	2
	tall	haute	hoch	alta	Balo, Mira, Stala	3
5. (*) QN MS/VG		**(+)**	**62-65**			
	Leaf: length	**Feuille : longueur**	**Blatt: Länge**	**Hoja: longitud**		
	short	courte	kurz	corta	Astra, Atara, Balo	1
	medium	moyenne	mittel	mediana	Anabela, Vetrovska	2
	long	longue	lang	larga	Amerigo	3
6. (*) QN MS/VG		**(+)**	**62-65**			
	Leaf: width	**Feuille : largeur**	**Blatt: Breite**	**Hoja: anchura**		
	narrow	étroite	schmal	estrecha	Natra	1
	medium	moyenne	mittel	mediana	Beehappy, Boratus	2
	broad	large	breit	ancha	Anabela	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
7.	**(*)**	**QN VG**	**(+)**	**62-65**			
		Leaf: anthocyanin coloration	**Feuille : pigmentation antocyanique**	**Blatt: Anthocyanfärbung**	**Hoja: pigmentación antociánica**		
		absent or weak	absente ou faible	fehlend oder sehr gering	ausente o leve	Lilla	1
		medium	moyenne	mittel	media	Lisette	2
		strong	forte	stark	intensa	Factotum	3
8.	**(*)**	**PQ VG**		**62-65**			
		Flower: color	**Fleur : couleur**	**Blüte: Farbe**	**Flor: color**		
		white	blanc	weiß	blanco	Blanca	1
		blue violet	violet-bleu	blauviolett	violeta azulado	Angelia	2
		red violet	violet-rouge	rotviolett	violeta rojizo		3
9.	**(*)**	**QN MS/VG**		**75-78**			
		Plant: length of stem including infructescences	**Plante : longueur de la tige, y compris les infrutescences**	**Pflanze: Länge des Triebs einschließlich Fruchtstand**	**Planta: longitud del tallo (incluidas las infrutescencias)**		
		short	courte	kurz	corto		3
		medium	moyenne	mittel	mediano	Vega	5
		long	longue	lang	largo		7
10.	**(*)**	**QN MS/VG**	**(+)**	**75-78**			
		Infructescence: length	**Infrutescence : longueur**	**Fruchtstand: Länge**	**Infrutescencia: longitud**		
		short	courte	kurz	corta	Factotum	1
		medium	moyenne	mittel	mediana	Vetrovska	3
		long	longue	lang	larga	Barcelia	5
11.	**(*)**	**QN VG**	**(+)**	**75-78**			
		Infructescence: number of tendrils	**Infrutescence : nombre de vrilles**	**Fruchtstand: Anzahl der Ranken**	**Infrutescencia: número de zarcillos**		
		few	petit	wenige	bajo	Boratus	1
		medium	moyen	mittel	medio	Angelia, Oka	2
		many	grand	viele	alto	Amerigo, Meva	3
12.		**QN MG**		**89**			
		1000 seed weight	**Poids de 1000 graines**	**1000-Korngewicht**	**Peso de 1000 semillas**		
		low	petit	gering	bajo	Lilla	3
		medium	moyen	mittel	medio	Vetrovska	5
		high	grand	hoch	alto	Anabela	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13.	**QN VG**		**89**			
	Seed: intensity of brown color	**Semence : intensité de la couleur brune**	**Samen: Intensität der Braunfärbung**	**Semilla: intensidad del color marrón**		
	light	faible	hell	claro	Amerigo, Anabela	1
	medium	moyenne	mittel	intermedio	Lilla, Stala	2
	dark	forte	dunkel	oscuro	Natra	3

8. Explanations on the Table of Characteristics

8.1 Explanations for individual characteristics

Ad. 1: Ploidy

The ploidy should be determined by standard cytological methods.

Ad. 3: Time of beginning of flowering

Beginning of flowering is reached when 10% of plants have open flowers.

Ad. 4: Plant: natural height

To be observed from the base of the plant to the top of the inflorescence on the main stem.

Ad. 5: Leaf: length

A leaf from the middle part of the main stem should be observed.

Ad. 6: Leaf: width

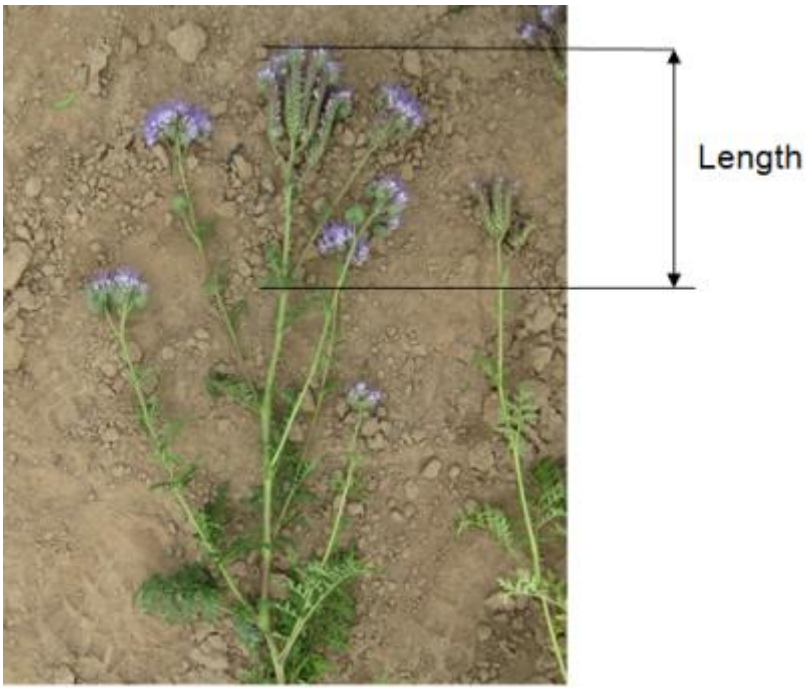
A leaf from the middle part of the main stem should be observed. Width should be measured at the widest part.

Ad. 7: Leaf: anthocyanin coloration

To be observed on leaves from the middle part of the main stem.

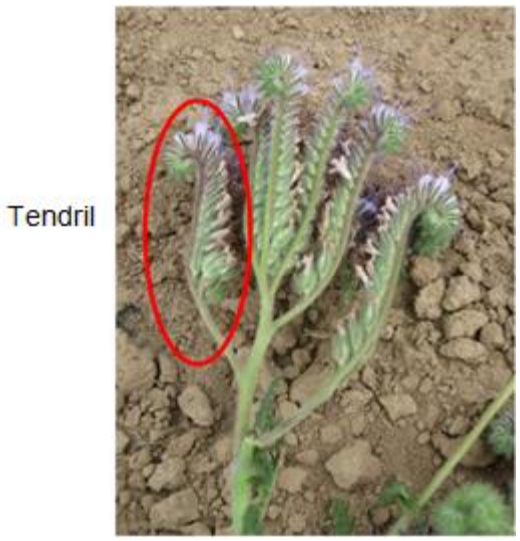
Ad. 10: Infructescence: length

The infructescence should be observed from the uppermost branch on the main stem to the top of the uppermost tendril.



Ad. 11: Infructescence: number of tendrils

The number of tendrils should be observed in the infructescence of the main stem.



8.2 Growth stages

KEY	GENERAL DESCRIPTION
0	Germination
00	Dry Seed
10	Leaf development
20	Formation of side shoots
30	Stem elongation, shoot development (main shoot)
31	Stem 10% of final length
32	Stem 20% of final length
33	Stem 30% of final length
34	Stem 40% of final length
35	Stem 50% of final length
39	Maximum stem length reached
50	Inflorescence emergence (main shoot)
60	Flowering
61	Beginning of flowering: 10% of flowers open
62	20% of flowers open
63	30% of flowers open
64	40% of flowers open
65	Full flowering: 50% of flowers open, first petals may be fallen
67	Flowering finishing: majority of petals fallen or dry
69	End of flowering: fruit set visible
70	Development of seeds
75	50% of seeds have reached final size
76	60% of seeds have reached final size
77	70% of seeds have reached final size
78	80% of seeds have reached final size
79	All seeds have reached final size
80	Maturity of seeds
89	Fully ripe: seeds show fully-ripe color

9. Literature

Demianowicz, Z., 1953: Rosliny miododajne. PWRiL, Warszawa, PL.

Jasinska, Z., Kołecki, A.,1999: Szczgólowa Uprawa Roślin. AXA, Wrocław, PL, p.305.

Meyer, U. (Ed.), 1997: Growth stages of mono- and dicotyledonous plants: BBCH Monograph. Biologische Bundesanstalt fur Land- und Forstwirtschaft (ed.). Blackwell Wiss.-Verlag. Wien, AT, pp. 100-105.

Podbielkowski, Z., 1985: Słownik roślin użytkowych. PWRiL, Warszawa, PL, p.89.

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	*Phacelia tanacetifolia* Benth.
1.2	Common name	Scorpion Weed

2. Applicant

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

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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

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

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]

(please state parent varieties)

(……..……..…) 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)

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

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

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

(a) Cross-pollination [ ]
(i) Synthetic variety [ ]
(ii) Population [ ]
(b) Other (please provide details) [ ]

4.2.2 Other [ ]
(Please provide details)

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

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

	Characteristics	Example Varieties	Note
5.1 (1)	**Ploidy**		
	diploid	Amerigo, Lisette, Oka, Wolga	2 [ ]
	tetraploid		4 [ ]
5.2 (3)	**Time of beginning of flowering**		
	very early		1 [ ]
	very early to early		2 [ ]
	early	Barcelia, Lilla	3 [ ]
	early to medium		4 [ ]
	medium	Amerigo, Anabela	5 [ ]
	medium to late		6 [ ]
	late	Beehappy	7 [ ]
	late to very late		8 [ ]
	very late		9 [ ]
5.3 (4)	**Plant: natural height**		
	short	Asta	1 [ ]
	medium	Anabela, Lilla, Natra	2 [ ]
	tall	Balo, Mira, Stala	3 [ ]
5.4 (8)	**Flower: color**		
	white	Blanca	1 [ ]
	blue violet	Angelia	2 [ ]
	red violet		3 [ ]
5.5 (10)	**Infructescence: length**		
	short	Factotum	1 [ ]
	short to medium		2 [ ]
	medium	Vetrovska	3 [ ]
	medium to long		4 [ ]
	long	Barcelia	5 [ ]

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

6. Similar varieties and differences from these varieties

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

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example	*Leaf: length*	*short*	*medium*

Comments:

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

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

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

Yes [ ] No [ ]

(If yes, please provide details)

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

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

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

8. Authorization for release

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

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

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

9. Information on plant material to be examined or submitted for examination

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

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

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

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

.....

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant’s name

Signature Date

End of document