

UPOV

TG/MEDICS(proj.2)

ORIGINAL: English

DATE: June 10, 2004

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

MEDICS

UPOV code: MEDIC_
(excluding: MEDIC-SAT)

(*Medicago* L. (excluding *M. sativa* L. &
Medicago x varia Martyn))

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from South Africa

*to be considered by the
Technical Working Party for Agricultural Crops at its thirty-third session,
to be held in Poznan, Poland, from June 28 to July 2, 2004*

Alternative Names: *

<i>Latin</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Medicago</i> L. (excluding <i>M. sativa</i> L. & <i>Medicago x varia</i> Martyn)	Medics			

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 guidelines ("Test Guidelines") should be read in conjunction with document TG/1/3, "General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants" (hereinafter referred to as the "General Introduction") and its associated "TGP" documents.

Other associated UPOV 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]

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
1. SUBJECT OF THESE TEST GUIDELINES	3
2. MATERIAL REQUIRED.....	3
3. METHOD OF EXAMINATION	3
3.1 Number of Growing Cycles.....	3
3.2 Testing Place	3
3.3 Conditions for Conducting the Examination	3
3.4 Test Design.....	4
3.5 Number of Plants / Parts of Plants to be Examined	4
3.6 Additional Tests.....	4
4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY	4
4.1 Distinctness.....	4
4.2 Uniformity	5
4.3 Stability	5
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL.....	5
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS	6
6.1 Categories of Characteristics	6
6.2 States of Expression and Corresponding Notes	6
6.3 Types of Expression	6
6.4 Example Varieties	6
6.5 Legend.....	6
7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES	8
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS	19
8.1 Explanations covering several characteristics	19
8.2 Explanations for individual characteristics.....	19
9. LITERATURE.....	23
10. TECHNICAL QUESTIONNAIRE.....	24

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Medicago* L. excluding *Medicago sativa* L. & *Medicago x varia* Martyn

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:

1,5 kg

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

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:

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

3.3.3 The recommended type of plot in which to observe the characteristic is indicated by the following key in the second column of the Table of Characteristics:

A: spaced plants

B: row plot

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 60 spaced plants and 10 meters of row plot, which should be divided between 3 replicates. The density of the seed should be such that about 200 plants per meter can be expected.

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 60 plants or parts taken from each of 60 plants.

3.6 *Additional Tests*

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 *Distinctness*

4.1.1 *General Recommendations*

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

4.1.2 *Consistent Differences*

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

4.1.3 Clear Differences

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

4.2 *Uniformity*

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

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

4.3 *Stability*

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

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

5. Grouping of Varieties and Organization of the Growing Trial

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

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

5.3 The following have been agreed as useful grouping characteristics:

- (a) Leaflet: presence of marks (characteristic 1)
- (b) Leaflet: type of marks on upper side (characteristic 2)
- (c) Time of full flowering (characteristic 7)
- (d) Leaflet: pubescence (characteristic 19)
- (e) Pod: texture of whorl edges (characteristic 39)

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 (Section 6.1.2)

QL Qualitative characteristic – see Chapter 6 (Section 6.3)

QN Quantitative characteristic – see Chapter 6 (Section 6.3)

PQ Pseudo-qualitative characteristic – see Chapter 6 (Section 6.3)

- MS Measurement of a number of individual plants or parts of plants – see Section 3.3.2
- VG Visual assessment by a single observation of a group of plants or parts of plants
– see Section 3.3.2
- VS Visual assessment by observation of individual plants or parts of plants
– see Section 3.3.2

(a) – (f) See Explanations on the Table of Characteristics in Chapter 8, Section 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8, Section 8.2

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1.	VS/A Leaflet: presence of marks					
(*)						
QL	(a)	absent on both sides				1
		present on upper side only				2
		present on lower side only				3
		present on both sides				4
2.	VS/A Leaflet: type of marks on <u>upper side</u>					
(*)						
(+)						
PQ	(a)	faded blotch				1
		clear blotch				2
		spot				3
		fleck				4
		crescent				5
		flush				6
3.	VS/A Leaflet: position of marks on <u>upper side</u>					
(*)						
(+)						
PQ	(a)	at base				1
		towards base				2
		central				3
		towards apex				4
		at apex				5
		at random				6
		whole surface				7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
4.	VS/A Leaflet: color of marks on <u>upper side</u>					
PQ	(a) white					1
	yellow					
	pale green					2
	red					3
	pink					
	purple					4
	brown					5
	black					6
5.	VS/A <u>Varieties with flecks and/or spots only:</u> Leaflet: number of marks on <u>upper side</u>					
QN	(a) very few					1
	few					3
	medium					5
	many					7
6.	VS/A <u>Varieties with flecks and/or spots only:</u> Leaflet: number of marks on <u>lower side</u>					
QN	(a) very few					1
	few					3
	medium					5
	many					7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
7. VG/B	Time of full					
(*)	flowering					
(+)	VS/A					
QN	very early					1
	early					3
	medium					5
	late					7
	very late					9
8. VG/B	Plant: vigor					
	(b)					
QN	weak					3
	medium					5
	strong					7
9. MS/A	Plant: length of					
	longest stem					
QN	(b) short					3
	medium					5
	long					7
10. MS/A	Plant: length of					
	internode					
QN	(b) short					3
	medium					5
	long					7
11. VS/A	Plant: pubescence					
	on runner					
QN	(b) sparse					3
	medium					5
	dense					7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
12. MS/A Leaflet: length						
QN	(c) very short					1
	short					3
	medium					5
	long					7
	very long					9
13. MS/A Leaflet: width						
QN	(c) very narrow					1
	narrow					3
	medium					5
	broad					7
	very broad					9
14. VS/A Leaflet: length in relation to width						
QL	(c) shorter					1
	equal					2
	longer					3
15. VS/A Leaflet: position of maximum width						
QL	(c) towards base					1
	in middle					2
	towards apex					3
16. VS/A Leaflet: shape of base						
(+)						
PQ	(c) acute					1
	obtuse					2
	truncate					3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
17. VS/A	Leaflet: shape of apex					
(+)						
PQ (c)	acute					1
	right angle					2
	obtuse					3
	truncate					4
	obcordate					5
18. VS/A	Leaflet: serration of margin					
QN (c)	absent or very fine					1
	fine					3
	medium					5
	coarse					7
19. VS/A	Leaflet: pubescence					
(*)						
QL (c)	absent on both sides					1
	present on upper side only					2
	present on lower side only					3
	present on both sides					4
20. VS/A	Leaflet: type of pubescence on upper side					
QL (c)	prostrate hairs					1
	erect hairs					2
	prostrate and erect hairs					3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
21. VS/A	Leaflet: density of pubescence on <u>upper side</u>					
QN	(c)				sparse	3
					medium	5
					dense	7
22. VS/A	Leaflet: type of pubescence on <u>lower side</u>					
QL	(c)				prostrate hairs	1
					erect hairs	2
					prostrate and erect hairs	3
23. VS/A	Leaflet: density of pubescence on <u>lower side</u>					
QN	(c)				sparse	3
					medium	5
					dense	7
24. MS/A	Petiole: length					
QN	(c)				short	3
					medium	5
					long	7
25. VS/A	Petiole: thickness					
QN	(c)				thin	3
					medium	5
					thick	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
26. VS/A Stipule: size						
QN (d)	very small					1
	small					3
	medium					5
	large					7
	very large					9
27. VS/A Stipule: length of teeth						
QN (d)	short					3
	medium					5
	long					7
28. VS/A Inflorescence: number of florets						
QL (e)	less than two					1
	two to four					2
	five to six					3
	more than six					4
29. VS/A Flower: main color of petal						
QL (e)	white					1
	yellow					2
	orange					3
	pink					4
	violet					5
30. VS/A Flower: intensity of main color of petal						
QN (e)	light					3
	medium					5
	dark					7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
31. VS/A Flower: mark on calyx tube						
(+)						
QL	(e) absent					1
	present					9
32. VS/A Flower: color of mark on calyx tube						
PQ	(e) green					1
	blackish					2
33. VG/B Time of physiological maturity of pods						
(+)						
QN	early					3
	medium					5
	late					7
34. MS/A Pod: length						
QN	(f) short					3
	medium					5
	long					7
35. VS/A Pod: shape						
(*)						
(+)						
PQ	(f) disk-shaped					1
	globular					2
	ovoid					3
	cylindrical					4
	sickle-shaped					5

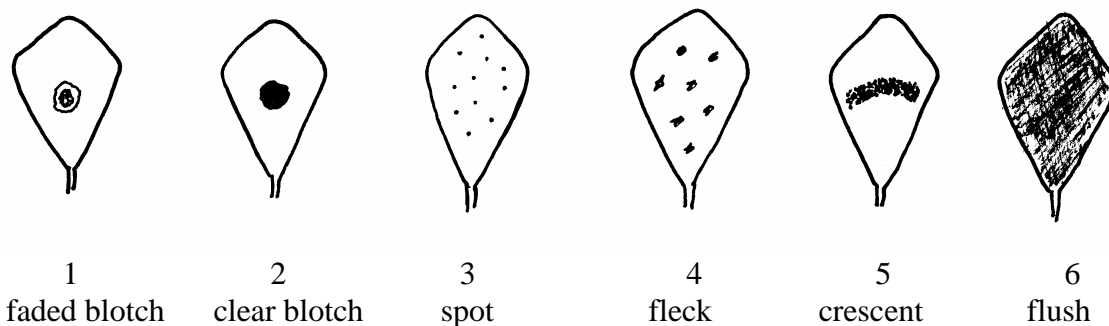
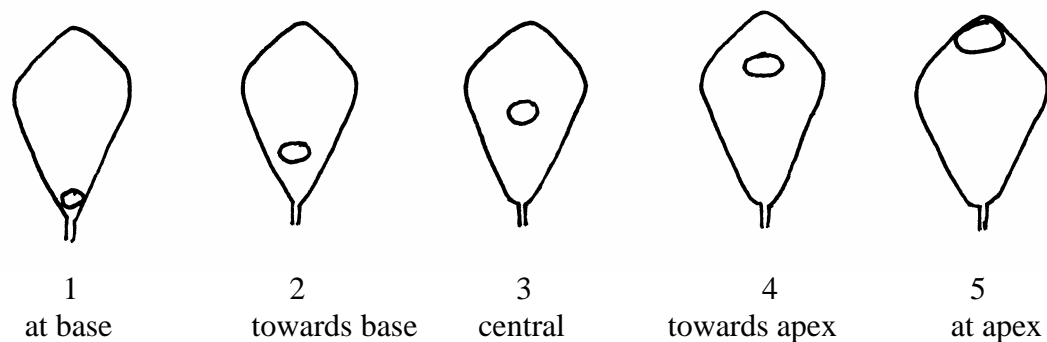
	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
36.	VS/A Pod: compactness of whorls					
QN	(f)					
	loose					3
	medium					5
	compact					7
37.	VS/A Pod: direction of whorls					
	(+)					
QL	(f)					
	anti-clockwise					1
	clockwise					2
38.	VS/A Pod: number of spirals					
QN	(f)					
	less than three					1
	three to five					2
	more than five					3
39.	VS/A Pod: texture of whorl edges					
	(*)					
	(+)					
QL	(f)					
	spineless					1
	tubercled					2
	spined					3
40.	VS/A Pod: length of spines					
QN	(f)					
	short					3
	medium					5
	long					7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
41.	VS/A					
	Pod: attitude of spines					
(+)						
PQ	(f) erect					1
	oblique					2
	adpressed					3
42.	VS/A					
	Pod: presence of apical hook on spines					
(+)						
QL	(f) absent					1
	present					9
43.	MS					
	Seed: 1000 seed weight					
QN	low					3
	low					5
	high					7

8. Explanations on the Table of Characteristics8.1 *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) Observations on leaf marks should be made on the 3rd leaf from the growth point at the time of beginning of flowering (10% of plants with at least one flower) of the earliest variety in the trial. Most of the marks tend to fade or disappear after flowering when temperatures rise.
- (b) Observations on the plant should be made at the time of full flowering on the middle third of the longest stem.
- (c) Unless otherwise indicated, observations on the leaflet and petiole should be made on the central leaflet of fully developed leaves on the middle third of the longest stem at time of full flowering.
- (d) Observations on the stipule should be made on stipules on the middle third of the longest stem at time of full flowering.
- (e) Observations on the flower should be made at the time of full flowering.
- (f) Observations on the pod should be made on fully mature senesced plants.

8.2 *Explanations for individual characteristics*Ad. 2: Leaflet: type of marks on upper sideAd. 3: Leaflet: position of marks on upper side

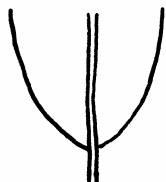
Ad. 7: Time of full flowering

Time of flowering is reached when 50% of the plants have at least 3 open flowers.

Ad. 16: Leaflet: shape of base



1
acute



2
obtuse



3
truncate

Ad. 17: Leaflet: shape of apex



1
acute



2
right angle



3
obtuse

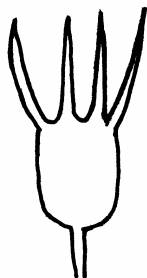


4
truncate



5
obcordate

Ad. 31: Flower: mark on calyx tube



1
absent



9
present

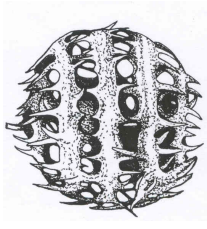
Ad. 33: Time of physiological maturity of pods

Time of physiological maturity is when pods have reached full maturity and 50% of the plant has started to dry.

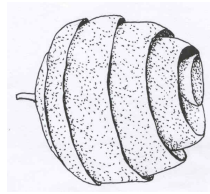
Ad. 35: Pod: shape



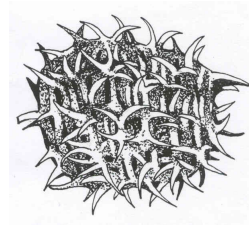
1
disk-shaped



2
globular



3
ovoid



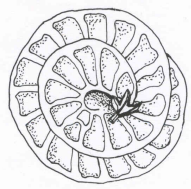
4
cylindrical

5

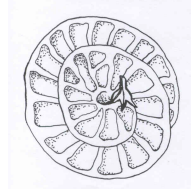
sickle-shaped

Ad. 37: Pod: direction of whorls

Pods should be observed in the basal view

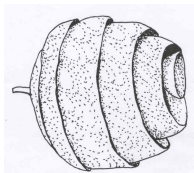


1
anti-clockwise

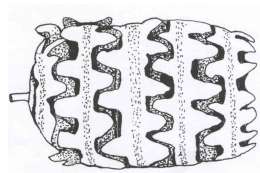


2
clockwise

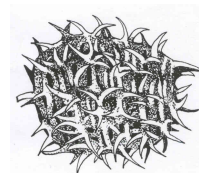
Ad. 39: Pod: texture of whorl edges



1
spineless

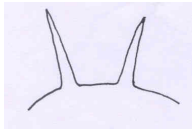


2
tubercled

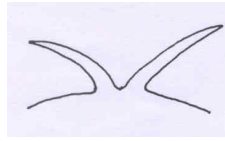


3
spined

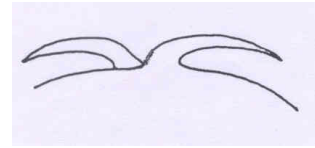
Ad. 41: Pod: attitude of spines



1
erect

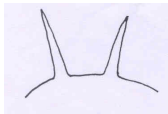


2
oblique

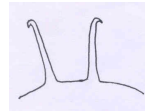


3
adpressed

Ad. 42: Pod: presence of apical hook on spines



1
absent



9
present

9. Literature

IBPGR. Rome. 1991. Descriptors for annual *Medicago*.

Lesins, K.A. & Lesins, I. 1979. Genus *Medicago* (Leguminosae) A Taxogenetic study.

Small, E.; Jomphe, M. 1989. A synopsis of the Genus *Medicago* (Leguminosae). Canadian Journal of Botany 67: 3260-3294

Stirton, C.H. 1982. The genus *Medicago* (Leguminosae) in southern Africa. Bothalia 14(1): 27-35.

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 Latin Name	<input type="text" value="Medicago L. (excluding M. sativa L. & Medicago x varia Martyn)"/>	
1.2 Common Name	<input type="text" value="MEDICS"/>	
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:
<p>#4. Information on the breeding scheme and propagation of the variety</p> <p>4.1 Breeding scheme</p> <p>Variety resulting from:</p> <p>4.1.1 Crossing</p> <p style="margin-left: 40px;">(a) controlled cross [] (please state parent varieties)</p> <p style="margin-left: 40px;">(b) partially known cross [] (please state known parent variety(ies))</p> <p style="margin-left: 40px;">(c) totally unknown cross []</p> <p>4.1.2 Discovery [] (please state where, when and how developed)</p> <p>4.1.3 Other [] (please provide details)]</p> <p>4.2 Method of propagating the variety</p>		
<p>5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).</p>		
Characteristics	Example Varieties	Note
<p>1. Leaflet: presence of marks</p> <p>(1)</p>		
absent on both sides		1
present on upper side only		2
present on lower side only		3
present on both sides		4

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:
	Characteristics	Example Varieties Note
5.2 (2)	Leaflet: type of marks on <u>upper side</u>	
	faded blotch	1
	clear blotch	2
	spot	3
	fleck	4
	crescent	5
	flush	6
5.3 (7)	Time of full flowering	
	very early	1
	early	3
	medium	5
	late	7
	very late	9
5.4 (19)	Leaflet: pubescence	
	absent on both sides	1
	present on upper side only	2
	present on lower side only	3
	present on both sides	4
5.5 (35)	Pod: shape	
	disk-shaped	1
	globular	2
	ovoid	3
	cylindrical	4
	sickle-shaped	5

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Characteristics	Example Varieties	Note
5.6	Pod: texture of whorl edges		
(39)			
	spineless		1
	tubercled		2
	spined		3

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
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Example (example to be inserted) (example to be inserted)

Comments:

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TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
<p>#7. Additional information which may help in the examination of the variety</p> <p>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?</p> <p>Yes [] No []</p> <p>(If yes, please provide details)</p> <p>7.2 Special conditions for the examination of the variety</p> <p>7.2.1 Are there any special conditions for growing the variety or conducting the examination?</p> <p>Yes [] No []</p> <p>7.2.2 If yes, please give details:</p> <p>7.3 Other information</p>		
<p>8. Authorization for release</p> <p>(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?</p> <p>Yes [] No []</p> <p>(b) Has such authorization been obtained?</p> <p>Yes [] No []</p> <p>If the answer to (b) is yes, please attach a copy of the authorization.</p>		

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:
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9. Information on plant material to be examined.

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 or pesticide) | Yes [] | No [] |
| (c) Tissue culture | Yes [] | No [] |
| (d) Other factors | Yes [] | No [] |

Please provide details of 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]