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TG/106/4(proj.2)
ORIGINAL: English
DATE: 2003-07-07

UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

*

LEAF BEET, SWISS CHARD

(*Beta vulgaris* L. var. *vulgaris* L.)

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

to be considered by the Enlarged Editorial Committee at its meeting
to be held in Geneva, Switzerland, January 14, 2004

Alternative Names:*

Latin	*English*	*French*	*German*	*Spanish*
Beta vulgaris L. *var. vulgaris* L., *Beta vulgaris* L. *var. cicla* L. (Ulrich)	Leaf Beet, Swiss Chard	Poirée, Bette à cardes	Mangold	Acelga

ASSOCIATED DOCUMENTS

These 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.

* 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 *Beta vulgaris* L. var. *vulgaris* L. (Syn. *Beta vulgaris* L. var. *cicla* L. (Ulrich)).

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:

100 g or at least 6,600 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 Duration of Tests

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

3.2 Testing Place

The tests should normally be conducted at one place. If any characteristics of the variety, which are relevant for the examination of DUS, cannot be observed at that place, the variety may be tested at an additional place.

3.3 Conditions for Conducting the Examination

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

3.3.1 Type of observation – visual or measurement

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 100 plants in the open or 60 plants in the greenhouse or plastic tunnel, which should be divided between two or more replicates.

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

3.5 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, all observations on single plants should be made on 20 plants or parts taken from each of 20 plants and any other observations made on all plants in the test.

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 minimum duration of tests recommended in Section 3.1 reflects, in general, the need to ensure that any differences in a characteristic are sufficiently consistent.

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

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:

4.2.1 Cross-pollinated varieties

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

4.2.2 Single cross hybrids and self-pollinated varieties (inbred lines)

For the assessment of uniformity of single cross hybrids and self-pollinated varieties (inbred lines), 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.

4.2.3 Hybrids

The assessment of uniformity for hybrid varieties depends on the type of hybrid and should be according to the recommendations for hybrid varieties in the General Introduction. In the case of single cross hybrids, the uniformity standards are set out in Section 4.2.2.

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 is 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) Leaf blade: intensity of green color (characteristic 7)
(b) Leaf blade: anthocyanin coloration (characteristic 11)
(c) Petiole: width (characteristic 14)
(d) Petiole: color (characteristic 16)

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 Section 6.1.2

QL Qualitative characteristic – see Section 6.3
QN Quantitative characteristic – see Section 6.3
PQ Pseudo-qualitative characteristic – see Section 6.3

MG: Single measurement of a group of plants or parts of plants – see Section 3.3.1
MS: Measurement of a number of individual plants or parts of plants – see Section 3.3.1
VG: Visual assessment by a single observation of a group of plants or parts of plants – see Section 3.3.1
VS: Visual assessment by observation of individual plants or parts of plants – see Section 3.3.1

(a) 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**	**Seedling: anthocyanin coloration**	**Plantule: pigmentation anthocyanique**	**Keimpflanze: Anthocyanfärbung**	**Plantúla: pigmentación antociánica**		
QL		absent	absente	fehlend	ausente	Blonde à carde blanche	1
		present	présente	vorhanden	presente	Rhubarb Chard	9
2.	**VS**	**Seedling: intensity of anthocyanin coloration**	**Plantule: intensité de la pigmentation anthocyanique**	**Keimpflanze: Stärke der Anthocyanfär-bung**	**Plantúla: intensidad de la pigmentación antociánica**		
QN		weak	faible	gering	débil	Verde de penca blanca ancha	3
		medium	moyenne	mittel	media	Amarilla de Lyon	5
		strong	forte	stark	fuerte	Rhubarb Chard	7
3. (*) (+)	**VG**	**Foliage: height**	**Feuillage: hauteur**	**Laub: Höhe**	**Follaje: altura**		
QN	**(a)**	short	basse	niedrig	bajo	Groene Gewone, Verde de penca blanca ancha	3
		medium	moyenne	mittel	medio	Blonde à carde blanche	5
		tall	haute	hoch	alto	Verte à carde blanche, Paros	7
4. (*)	**VG**	**Foliage: attitude**	**Feuillage: port**	**Laub: Haltung**	**Follaje: porte**		
QN	**(a)**	erect	dressé	aufrecht	erecto	Paros	1
		semi erect	demi- dressé	halbaufrecht	semierecto	Blonde à carde blanche	3
		prostrate	étalé	liegend	postrado	Groene Gewone	5

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
5. (*) (+)	**VG/ VS**	**Leaf blade: length**	**Limbe: longueur**	**Blattspreite: Länge**	**Limbo: longitud**		
QN	**(a)**	short	court	kurz	corto	Amarilla de Lyon, Groene Gewone	3
		medium	moyen	mittel	medio	Verde de Niza	5
		long	long	lang	largo	Blonde à carde blanche, Paros	7
6. (*) (+)	**VG**	**Leaf blade: width**	**Limbe: largeur**	**Blattspreite: Breite**	**Limbo: anchura**		
QN	**(a)**	narrow	étroit	schmal	estrecho	Lucullus, Groene Gewone	3
		medium	moyen	mittel	medio	Paros	5
		broad	large	breit	ancho	Verde à carde blanche	7
7. (*)	**VG**	**Leaf blade: intensity of green color**	**Limbe: intensité de la couleur verte**	**Blattspreite: Stärke der Grünfärbung**	**Limbo: intensidad del color verde**		
QN	**(a)**	very light	très claire	sehr hell	muy claro	Amarilla de Lyon	1
		light	claire	hell	claro	Blonde à carde blanche	3
		medium	moyenne	mittel	medio	Verde de Niza	5
		dark	foncée	dunkel	oscuro	Verde de penca blanca ancha	7
		very dark	très foncée	sehr dunkel	muy oscuro	Verde de penca blanca larga	9
8.	**VG**	**Leaf blade: reflexing of margin**	**Limbe: enroulement du bord**	**Blattspreite: Randbiegung**	**Limbo: curvatura del ápice**		
QN	**(a)**	absent or very weak	nul ou très faible	fehlend oder sehr gering	ausente o muy débil	Groene Gewone	1
		weak	faible	gering	débil	Blonde à carde blanche	3
		medium	moyen	mittel	media		5
		strong	fort	stark	fuerte	Lucullus	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
9.	**VG**	**Leaf blade: glossiness**	**Limbe: brillance**	**Blattspreite: Glanz**	**Limbo: brillo**		
QN	**(a)**	weak	faible	gering	débil	Groene Gewone	3
		medium	moyenne	mittel	medio		5
		strong	forte	stark	fuerte	Blonde à carde blanche, Paros	7
10. (*)	**VG**	**Leaf blade: blistering**	**Limbe: cloqûre**	**Blattspreite: Blasigkeit**	**Limbo: abullonado**		
QN	**(a)**	weak	faible	gering	débil	Groene Gewone	3
		medium	moyenne	mittel	medio	Blonde à carde blanche, Paros	5
		strong	forte	stark	fuerte	Lucullus	7
11. (*)	**VG**	**Leaf blade: anthocyanin coloration**	**Limbe: pigmentation anthocyanique**	**Blattspreite: Anthocyanfärbung**	**Limbo: pigmentación antociánica**		
QL	**(a)**	absent	absente	fehlend	ausente	Blonde à carde blanche	1
		present	présente	vorhanden	presente	Rhubarb Chard	9
12.	**VG**	**Leaf blade: intensity of anthocyanin coloration**	**Limbe: intensité de la pigmentation anthocyanique**	**Blattspreite: Stärke der Anthocyanfär-bung**	**Limbo: intensidad de la pigmentación antociánica**		
QN	**(a)**	weak	faible	gering	débil		3
		medium	moyenne	mittel	media	Rhubarb Chard	5
		strong	forte	stark	fuerte	Charlotte	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
13. **(+)**	**VS**	**Petiole: length**	**Pétiole: longueur**	**Blattstiel: Länge**	**Pecíolo: longitud**		
QN	**(a)**	very short	très court	sehr kurz	muy corto		1
		short	court	kurz	corto	Lucullus	3
		medium	moyen	mittel	medio	Paros	5
		long	long	lang	largo	Blonde à carde blanche, Verde de penca blanca larga	7
		very long	très long	sehr lang	muy largo	Groene Gewone	9
14. **(*)** **(+)**	**VS**	**Petiole: width**	**Pétiole: largeur**	**Blattstiel: Breite**	**Pecíolo: anchura**		
QN	**(a)**	very narrow	très étroit	sehr schmal	muy estrecho	Groene Gewone	1
		narrow	étroit	schmal	estrecho	Rhubarb Chard, Verde de Niza	3
		medium	moyen	mittel	medio	Lucullus, Verde de penca blanca larga	5
		broad	large	breit	ancho	Amarilla de Lyon	7
		very broad	très large	sehr breit	muy ancho	Paros, Verde de penca blanca ancha	9
15. **(+)**	**VS**	**Petiole: curvature of inner side in cross section**	**Pétiole: courbure de la face interne de la section transversale**	**Blattstiel: Krümmung der Innenseite des Querschnitts**	**Pecíolo: curvatura de la cara interna en sección transversal**		
QN	**(a)**	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil		1
		weak	faible	gering	débil	Groene Gewone	3
		medium	moyenne	mittel	media	Lucullus	5
		strong	forte	stark	fuerte	Blonde à carde blanche	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
16. (*)	**VG**	**Petiole : color**	**Pétiole: couleur**	**Blattstiel: Farbe**	**Peciolo: color**		
PQ	**(a)**	white	blanc	weiß	blanco	Blonde à carde blanche	1
		yellow	jaune	gelb	amarillo	Bright Yellow	2
		green	vert	grün	verde	Groene Gewone	3
		pink	rose	rosa	rosa	Pink Passion	4
		purple	pourpre	purpurn	púrpura	Rhubarb Chard, Ruby Red	5
17.	**VG**	**Time of beginning of bolting**	**Époque de début de montaison**	**Zeitpunkt des Schossbeginns**	**Época del comienzo de la salida a flor**		
QN		early	précoce	früh	temprana	Paros, Verde de Niza	3
		medium	moyenne	mittel	media	Verde de penca blanca ancha	5
		late	tardive	spät	tardía	Amarilla de Lyon	7

8. Explanations on the Table of Characteristics

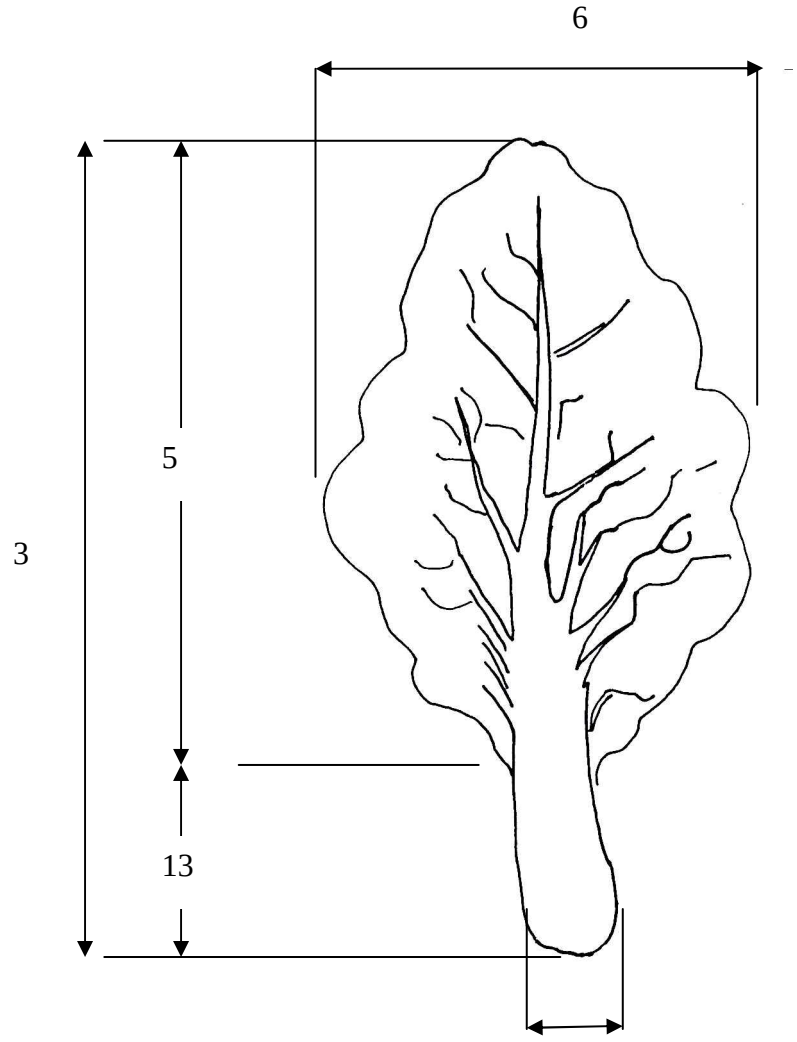
8.1 Explanations covering several characteristics

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

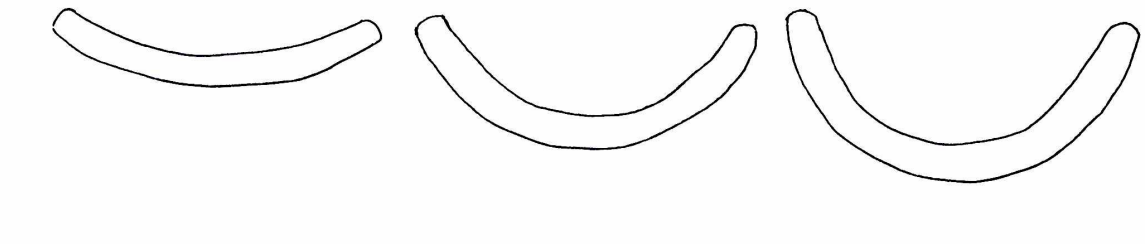
(a) All observations on the foliage, the leaf blade and the petiole should be made when the foliage has reached its maximum height.

8.2 Explanations for individual characteristics

Ad. 3: Foliage: height
Ad. 5: Leaf blade: length
Ad. 6: Leaf blade: width
Ad. 13: Petiole: length
Ad. 14: Petiole: width



Ad. 15: Petiole: curvature of inner side in cross section



1	5	7
absent or very weak	medium	strong

9. Literature

[no specific 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	Latin Name	*Beta vulgaris* L. var. *vulgaris* L. (Syn. *Beta vulgaris* L. var. *cicla* L. (Ulrich))
1.2	Common Name	Leaf Beet, Swiss Chard

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)
(b) partially known cross [ ]
(please state known parent variety(ies))
(c) totally unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)

4.1.3 Discovery [ ]
(please state where, when 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
(i) population [ ]
(ii) synthetic variety [ ]
(c) Hybrid [ ]
(d) 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 (7)	**Leaf blade : intensity of green color**		
	very light	Amarilla de Lyon	1[ ]
	light	Blonde à carde blanche	3[ ]
	medium	Verde de Niza	5[ ]
	dark	Verde de penca blanca ancha	7[ ]
	very dark	Verde de penca blanca larga	9[ ]
5.2 (11)	**Leaf blade: anthocyanin coloration**		
	absent	Blonde à carde blanche	1[ ]
	present	Rhubarb Chard	9[ ]
5.3 (14)	**Petiole: width**		
	very narrow	Groene Gewone	1[ ]
	narrow	Rhubarb Chard, Verde de Niza	3[ ]
	medium	Lucullus, Verde de penca blanca larga	5[ ]
	broad	Amarilla de Lyon	7[ ]
	very broad	Paros, Verde de penca blanca ancha	9[ ]
5.4 (16)	**Petiole : color**		
	white	Blonde à carde blanche	1[ ]
	yellow	Bright Yellow	2[ ]
	green	Groene Gewone	3[ ]
	pink	Pink Passion	4[ ]
	purple	Rhubarb Chard, Ruby Red	5[ ]

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

6. Similar varieties and differences from these varieties

Please use the table, and space provided for comments, below 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	*Petiole: color*	*pink*	*purple*

Comments:

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 Special conditions for the examination of the variety

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

Yes [ ] No [ ]

7.2.2 If yes, please give details:

7.3 Other information

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.

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]