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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

LAEF 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
Technical Working Party for Vegetables at its thirty-seventh session,
to be held in Roelofarendsveen, Netherlands, from June 23 to 27, 2003*

Alternative Names: *

<i>Latin</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Beta vulgaris L. var. vulgaris L</i>	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. [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.]

2.5 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 **similar** 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 open or 60 plants in the glass house 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 should be made on 20 plants or parts taken from each of 20 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 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*

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.

4.2.3 For the assessment of uniformity, 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, and for a sample size of 100 plants, 5 off-types are allowed.

4.3 *Stability*

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

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

5. Grouping of Varieties and Organization of the Growing Trial

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

(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	absent		Blonde à cardé blanche	1
			present		Rhubarb Chard	9
2.	VS	Seedling: intensity of anthocyanin coloration	weak		Verde de penca blanca ancha	3
			medium		Amarilla de Lyon	5
			strong		Rhubarb Chard	7
3. (*)	VG	Foliage: height	short		Groene Gewone, Verde de penca blanca ancha	3
			(a) medium			5
			tall		Blonde à cardé blanche, Paros	7
4. (*)	VG	Foliage: attitude	erect		Paros	3
			(a) semi-erect			5
			prostrate		Groene Gewone	7
5. (*)	VS	Leaf blade: length	short		Amarilla de Lyon, Groene Gewone	3
			(a) medium		Verde de Niza	5
			long		Blonde à cardé blanche, Paros	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
6.	VS	Leaf blade: width					
(*)	narrow				Lucullus, Groene Gewone	3	
	(a) medium					5	
	broad				Verde à carde blanche	7	
7.	VG	Leaf blade: intensity of green color					
(*)	very light				Amarilla de Lyon	1	
	(a) 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	
8.	VG	Leaf blade: reflexing of margin					
(*)	absent or very dark				Groene Gewone	1	
	(a) weak				Blonde à carde blanche	3	
	medium					5	
	strong				Lucullus	7	
	very strong					9	
9.	VG	Leaf blade: glossiness					
	weak				Groene Gewone	3	
	(a) medium					5	
	strong				Blonde à carde blanche, Paros	7	

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
10. (*)	VG	Leaf blade:					
		blistering					
			weak			Groene Gewone	3
	(a)	medium			Blonde à cardé blanche, Paros	5	
		strong			Lucullus	7	
11. (*)	VG	Leaf blade:					
		anthocyanin					
		coloration					
	(a)	absent			Blonde à cardé blanche	1	
		present			Rhubarb Chard	9	
NEW	VG	Leaf blade:					
12.		intensity of					
(*)		anthocyanin					
		coloration					
		weak					3
	(a)	medium			Rhubarb Chard		5
		strong			Charlotte		7
13.	VS	Petiole: length					
		very short					1
	(a)	short			Lucullus		3
		medium			Paros		5
		long			Blonde à cardé blanche, Verde de penca blanca larga		7
		very long			Groene Gewone		9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
14.	VS	Petiole: width				
(*)		very narrow			Groene Gewone	1
	(a)	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
15.	VS	Petiole: curvature of adaxial side in cross section				
		absent or very weak				1
	(a)	weak			Groene Gewone	3
		medium			Lucullus	5
		strong			Blonde à cardé blanche	7
		very strong				9
16.	VS	Petiole : color				
(*)		white			Blonde à cardé blanche	1
new	(a)	yellow			Bright Yellow	2
		pink			Pink Passion	3
		purple			Rhubarb Chard Rugby Red	4
		green			Groene Gewone	5
17.	VG	Time of beginning of bolting				
		early			Paros, Verde de Niza	3
		medium			Verde de penca blanca ancha	5
		late			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) Foliage, leaf blade and petiole: 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]*

[no specific explanation]

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	<input type="text" value="Beta vulgaris L. var. vulgaris L. (Syn. Beta vulgaris L. var. cicla L. (Ulrich))"/>	
1.2 Common Name	<input type="text" value="Leaf Beet, Swiss Chard"/>	
2. Applicant		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	
Fax No.	<input type="text"/>	
E-mail address	<input type="text"/>	
Breeder (if different from applicant)	<input type="text"/>	
3. Proposed denomination and breeder's reference		
Proposed denomination (if available)	<input type="text"/>	
Breeder's reference	<input type="text"/>	

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

4.1 Breeding scheme

☐ Variety resulting from:

4.1.1 Crossing

- (a) controlled cross []
(please state parent varieties)
- (b) partially known cross []
(please state known parent variety(ies))
- (c) 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

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 Leaf blade : intensity of green color (7)		
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 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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5.2 Leaf blade: anthocyanin coloration			
(11)			
	absent	Blonde à carde blanche	1[]
	present	Rhubarb Chard	9[]
5.3 Petiole: width			
(14)			
	very narrow	Groene Gewone	1[]
	narrow	Rhubarb Chard, Verde de Niza	3[]
	mdium	Lucullus, Verde de penca blanca larga	5[]
	broad	Amarilla de Lyon	7[]
	very broad	Paros, Verde de penca blanca ancha	9[]
5.4 Petiole: color			
(16)			
NEW	white	Blonde à carde blanche	1[]
	yellow	Bright Yellow	2[]
	pink	Pink Passion	3[]
	red	Rhubarb Chard Ruby Red	4[]
	green	Groene Gewone	5[]

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

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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>		

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]