

**TWV/35/8****ORIGINAL:** English**DATE:** May 25, 2001

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

TECHNICAL WORKING PARTY FOR VEGETABLES

Thirty-Fifth Session

WORKING PAPER ON TEST GUIDELINES FOR CELERY
(*Apium graveolens* L. var. *dulce* (Mill.) Pers.)

Document prepared by experts from the United Kingdom

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I. Subject of these Guidelines

These Guidelines apply to all varieties of *Apium graveolens* L. var. *dulce* (Mill.) Pers.

II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the seed required for testing the variety is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must make sure that all customs formalities are complied with. As a minimum, for each year of the test the following quantity of seed is recommended:

6 g.

The seed should at least meet the minimum requirements for germination capacity, moisture content and purity for marketing standard seed in the country in which the application is made. The germination capacity should be as high as possible.

2. The plant material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of Tests

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

2. The tests should normally be conducted at one place. If any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.

3. The tests should be carried out under conditions ensuring normal growth. The size of the plots should be such that plants or parts of plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the growing period. Each test should include a total of 60 plants which should be divided between two or more replicates. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Additional tests for special purposes may be established.

IV. Methods and Observations

1. Unless otherwise indicated, all observations determined by measurement, weighing or counting should be made on 30 plants or parts taken from each of 30 plants.

2. For the assessment of uniformity of open pollinated and hybrid varieties relative uniformity standards should be applied.

3. All observations on the plant and the leaf should be made on fully developed plants before harvest maturity.

V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.

2. It is recommended that the competent authorities use the following characteristics for grouping varieties:

- (a) Petiole: self blanching (characteristic 18)
- (b) Petiole: anthocyanin coloration (characteristic 20)

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.

2. Notes (in most cases 1 to 9), for the purposes of electronic data processing, are given opposite the states of expression for each characteristic.

3. Legend:

(*) Characteristics that should be used on all varieties in every growing period over which the examinations are made and always be included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.

(+) See Explanations on the Table of Characteristics in chapter VIII.

* * * * *

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

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. Plant: height					
(*) very short				Afina	1
short				Claudius	3
medium				Green Sleeves	5
tall				Martine	7
very tall				Giant Red	9
2. Plant: number of lateral shoots					
absent of very few				Ideal	1
few				Summit	3
medium				Groene Pascal	5
many				Del Valdarno	7
3. Foliage: attitude		Laub: Haltung			
(*) erect		aufrecht		Autumn Gold	1
erect to semi-erect		aufrecht bis halbaufrecht		Green Sleeves	2
semi-erect		halbaufrecht		Shamrock	3
semi-erect to horizontal		halbaufrecht bis waagerecht		Amsterdam Donkergroene	4
horizontal		waagerecht		Martine	5
4. Foliage: number of leaves		Laub: Menge			
few				Gigante di Romagna	3
medium				Green Sleeves	5
many				Ideal	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5. Foliage: green color (excluding petioles)					
(*) very light				Ivory Tower	1
light		hell		Victoria	3
medium		mittel		Multipak	5
dark		dunkel		Mammoth White; Giant Red	7
6. Foliage: glossiness					
weak				Ramon	3
medium				Lino	5
strong				Golden Spartan	7
7. Foliage: blistering					
absent or very weak				Amsterdam Donkergroene	1
weak				Florida 683; Giant Red	3
medium				Lino	5
strong				Groene Pascal	7
8. Leaf: length (including petiole)					
(*)		Blattspreite: Länge			
(+)					
short		kurz		Golden Spartan	3
medium		mittel		Celebrity	5
long		lang		Martine	7
9. Leaf blade: distance between 1st and 2nd leaflet pairs					
(+)		Blattspreite: Abstand zwischen 1. und 2. Blattfiederpaar			
short		kurz			3
medium		mittel			5
long		lang			7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10. Leaf blade: size of the terminal leaflet (*)		Blatt: Größe des Endfiederblattes			
(+) small		klein		Stardust;Giant Red	3
medium		mittel		Shamrock	5
large		groß			7
11. Leaflet: shape of tips on margin (*)		Blattfieder: Form der Spitzen des Randes			
(+) pointed				Plein blanc doré Barbier	1
rounded				D'Elne	2
12. Leaflet: density of margin incisions (+)		Blattfieder: Dichte der Randeinschnitte			
sparse		locker		Multipak	3
medium		mittel		Del Valdarno	5
dense		dicht		Golden Spartan	7
13. Leaflet: arrangement of leaflets (* (+)		Blattfieder: Anordnung der Blattlappen			
not touching					1
touching		sich berührend			2
overlapping		überlappend			3
14. Petiole: anthocyanin coloration (*)		Blattstiel: Anthocyanfärbung			
absent		fehlend		Golden Spartan	1
present		vorhanden		Giant Red	9
15. Petiole: intensity of anthocyanin					
weak				Giant Pink	3
medium				Ideal	5
strong				Giant Red	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16. Petiole: length		Blattstiel: Länge			
(*) short				Oscar	3
(+) medium		mittel		Groene Pascal	5
long				Giant Red	7
17. Petiole: width		Blattstiel: Breite			
(+) narrow		schmal		Ideal	3
medium		mittel		Green Sleeves	5
broad		breit		Top Seller	7
18. Petiole: prominence of ribs					
absent or very weak				Plein blanc Lepage	1
weak				Golden Self-Blanching	3
medium				Victoria	5
strong				Claudius	7
19. Petiole: internal structure					
solid				Lathom Self-Blanching	1
hollow				Cutting Celery	2
20. Petiole: shape of inner side in cross section					
straight				D'Elne	1
slightly concave				Groene Pascal	2
strongly concave				Green Sleeves	3
21. Petiole: self-blanching					
absent				Groene Pascal	1
present				Autumn Gold	2

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
22. Petiole: intensity of green color (not earthen up)					
light				Autumn Gold	3
medium				Green Sleeves	5
dark				Giant Red	7
23. Tendency to bolt					
weak				Florida 683	3
medium				Early Bell	5
strong				Tendercrisp	7

VIII. Explanations on the Table of Characteristics/Explications du tableau des caractères/Erklärungen zu der Merkmalstabelle

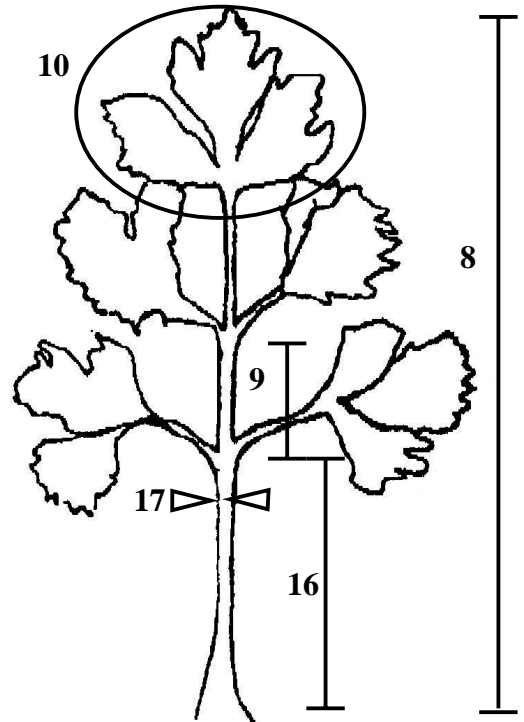
Ad/zu 8, 9, 10, 16, 17

Leaf: length (including petiole) (8)

Leaf blade: distance between 1st and 2nd pair of leaflets (9)

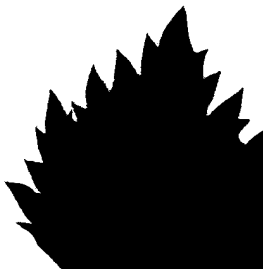
Leaf: size of the terminal leaflet (10)

Petiole: length (16)
width (17)

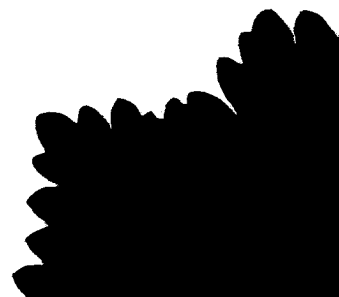


Ad/zu 11

Leaflet: shape of tips on margin
Blattfieder: Form der Spitzen des Randes



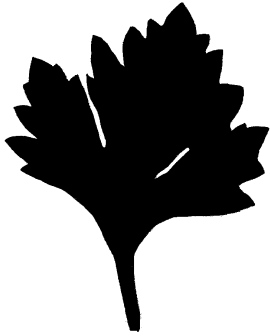
1 pointed



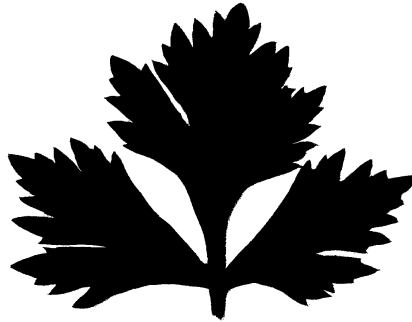
2 rounded

Ad/zu 12

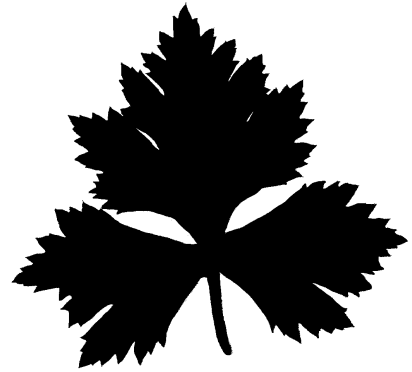
Leaflet: density of margin incisions
Blattfieder: Dichte der Randeinschnitte



3 sparse
locker



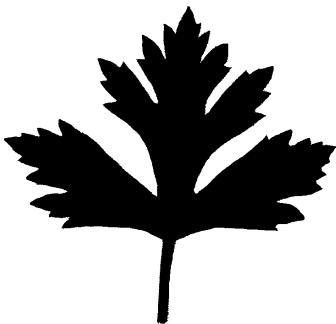
5 medium
mittel



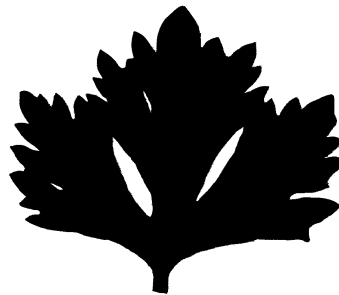
7 dense
dicht

Ad/zu 13

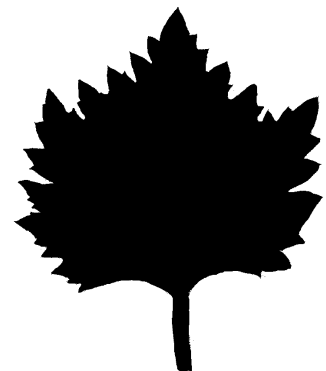
Leaflet: arrangement of lobes
Blattfieder: Stellung der Blattlappen



1 not touching



2 touching



3 overlapping

IX. Literature

BECKER-DILLINGEN, 3. (1956): Sellerie in: Handbuch des gesamten Gemüsebaues, 6. Auflage, Paul Parey Verlag, Berlin – Hamburg, 592-613

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QUIROS, C.F. (1993) Celery – *Apium graveolens* L. In Kalloo, G. and Bergh, B.O. (eds) Genetic Improvement of Vegetable Crops. Pergamon Press, Oxford. 523-534.

RAMIN, A.A., and ATHERTON, J.G. (1991). Manipulation of bolting and flowering in Celery (*Apium graveolens* var. *dulce*). 1. Effects of chilling during germination and seed development. Journal of Horticultural Science. 66 (4) 435-441.

RAMIN, A.A., and ATHERTON, J.G. (1991). Manipulation of bolting and flowering in Celery (*Apium graveolens* var. *dulce*). III. Effects of photoperiod and irradiance. Journal of Horticultural Science. 69 (5) 861-868.

RUBATKSKY, V.E., QUIROS, C.F. and SIMON, P.W. (1999): Carrots and related vegetable *Umbelliferae*. Crop Production Science in Horticulture Series; 10. CABI Publishing. Wallingford & New York. ISBN 0 85199 1297.

WIEBE, H.-J. (1989): Vernalisation von wichtigen Gemüsearten – Ein Überblick. Gartenbauwissenschaft 54 (3), Eugen Ulmer Verlag, Stuttgart, 97-104

IX. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)
<p>TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>	
1.1 Species	<p><i>Apium graveolens</i> L. var. <i>dulce</i> (Mill.) Pers. <i>Celery</i></p>
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	

4. Information on origin, maintenance and reproduction of the variety

4.1 Method of maintenance and reproduction

- (i) hybrid []
- (ii) open-pollinated variety []

4.2 Other information

5. Characteristics of the variety to be given (the number in brackets refers to the corresponding characteristics in the Test Guidelines; please mark the state of expression which best corresponds)			
Characteristics		Example Varieties	Note
5.1 Plant: height (1)			
	short		3 []
	medium		5 []
	tall		7 []
5.2 Foliage: attitude (2)			
	erect		1 []
	erect to semi erect		2 []
	semi erect		3 []
	semi erect to horizontal		4 []
	horizontal		5 []
5.3 Petiole: anthocyanin coloration (11)			
	absent		1 []
	present		9 []
5.4 Leaf: size of the terminal leaflet (12)			
	small		3 []
	medium		5 []
	large		7 []
5.5 Leaflet: shape of tips on margin (11)			
	pointed		1 []
	rounded		2 []

Characteristics	Example Varieties	Note
5.6 Leaflet: arrangement of lobes (13)		
not touching		1 []
touching		2 []
overlapping		3 []

6. Similar varieties and differences between these varieties

Denomination of similar variety	Characteristic in which the similar variety is different ^{o)}	State of expression of similar variety	State of expression of candidate variety
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^{o)} In the case of identical states of expressions of both varieties, please indicate the size of the difference.

7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

7.3 Other information

A representative photocopy of one or more terminal leaflets in original size of the variety should be included in the Technical Questionnaire.

[Comment: discuss]

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 that question is yes, please attach a copy of such an authorization.

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