



TG/74/4 Corr.

INTERNATIONAL UNION
FOR THE PROTECTION
OF NEW VARIETIES OF
PLANTS

UNION INTERNATIONALE
POUR LA PROTECTION
DES OBTENTIONS
VÉGÉTALES

INTERNATIONALER
VERBAND ZUM SCHUTZ
VON PFLANZEN-
ZÜCHTUNGEN

UNIÓN INTERNACIONAL
PARA LA PROTECCIÓN
DE LAS OBTENCIONES
VEGETALES

GUIDELINES
FOR THE CONDUCT OF TESTS
FOR DISTINCTNESS, UNIFORMITY AND STABILITY

CELERIAC

*(Apium graveolens L. var.
rapaceum (Mill.) Gaud.)*

GENEVA
2002, 2006*

* The Technical Committee, during its session in April 2006, revised characteristic 6 of Chapter VII of the Test Guidelines for Celeriac. TG/74/4 Corr. replaces document TG/74/4.

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These Guidelines should be read in conjunction with document TG/1/2, which contains explanatory notes on the general principles on which the Guidelines have been established.

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I. Subject of these Guidelines

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

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:

4 grams.

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. 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 satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination. 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 cycle. Each test should be designed to result in a total of, at least 60 plants, which should be divided between two or more replicates. Separate plots for observation and for measuring should 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 40 plants or parts taken from each of 40 plants.

2. The assessment of uniformity for cross-pollinated varieties should be according to the recommendations in the General Introduction. The assessment of uniformity for hybrid varieties depends on the type of hybrid and should be according to the recommendations in the General Introduction.
3. All observations on the plant and the leaf should be made on fully developed plants before harvest maturity. All observations on the leaf should be made on leaves in the middle of the rosette of leaves.
4. All observations on the tuber should be made at 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 characteristic for grouping varieties:
 - (a) Petiole: anthocyanin coloration (characteristic 12)

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 (numbers), 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 cycle 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 (*)	Plante: hauteur	Pflanze: Höhe	Planta: altura		
short	basse	niedrig	baja	Ofir	3
medium	moyenne	mittel	media	Ibis, Monarch	5
tall	haute	hoch	alta	Bergers weisse Kugel, Boule de Marbre, Mars	7
2. Foliage: attitude (*) (+)	Feuillage: port	Laub: Haltung	Follaje: porte		
erect	dressé	aufrecht	erecto	Mars	1
erect to semi-erect	dressé à demi-dressé	aufrecht bis halbaufrecht	erecto a semierecto	Bergers weisse Kugel, Monarch	2
semi-erect	demi-dressé	halbaufrecht	semierecto	Anita, Ibis	3
semi-erect to horizontal	demi-dressé à horizontal	halbaufrecht bis waagrecht	semierecto a horizontal	Ofir	4
horizontal	horizontal	waagrecht	horizontal	Ilona	5
3. Foliage: number of leaves	Feuillage: nombre de feuilles	Laub: Anzahl Blätter	Follaje: número de hojas		
few	petit	gering	bajo		3
medium	moyen	mittel	medio	Ibis, Prinz	5
many	grand	groß	alto	Mars	7
4. Foliage: diameter of petiole insertion on tuber (+)	Feuillage: diamètre de l'insertion du pétiole sur le tubercule	Laub: Durchmesser des Blattstiel- ansatzes an der Knolle	Follaje: diámetro de la inserción del peciolo en el tubérculo		
small	petit	klein	pequeño		3
medium	moyen	mittel	medio		5
large	grand	groß	grande		7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5. Foliage: green coloration of inner leaves	Feuillage: couleur verte des feuilles internes	Laub: Grünfärbung der inneren Blätter	Follaje: color verde de las hojas interiores		
light	claire	hell	claro	Ortho	3
medium	moyenne	mittel	medio	Bergers weisse Kugel, Cesar, Prinz	5
dark	foncée	dunkel	oscuro	President	7
6. Foliage: green coloration of fully developed leaves	Feuillage: couleur verte des feuilles pleinement développées	Laub: Grünfärbung der ausgewachsenen Blätter	Follaje: color verde de las hojas completamente desarrolladas		
light	claire	hell	claro	Ibis	3
medium	moyenne	mittel	medio		5
dark	foncée	dunkel	oscuro	Bergers weisse Kugel, Mars, Monarch, Prinz	7
7. Leaf: length (*) (including petiole)	Feuille: longueur (pétiole compris)	Blatt: Länge (einschließlich Blattstiel)	Hoja: longitud (incluido el pecíolo)		
short	courte	kurz	corta	Ofir, Ortho	3
medium	moyenne	mittel	media	Anita	5
long	longue	lang	larga	Bergers weisse Kugel	7
8. Leaf blade: length (+)	Limbe: longueur	Blattspreite: Länge	Limbo: longitud		
short	court	kurz	corto	Ortho	3
medium	moyen	mittel	medio	Anita, Cesar, President	5
long	long	lang	largo	Bergers weisse Kugel	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9. Leaf blade: distance between 1st and 2nd leaflet pairs (+)	Limbe: distance entre la 1^{ère} et la 2^e paire de folioles	Blattspreite: Abstand zwischen 1. und 2. Blattfiederpaar	Limbo: distancia entre el 1^{er} y el 2^o par de folíolos		
short	courte	kurz	corta		3
medium	moyenne	mittel	media	Monarch, President, Prinz	5
long	longue	lang	larga	Bergers weisse Kugel	7
10. Petiole: length (+)	Pétiole: longueur	Blattstiel: Länge	Pecíolo: longitud		
short	court	kurz	corto	Prinz	3
medium	moyen	mittel	medio	Cesar, Diamant	5
long	long	lang	largo	Bergers weisse Kugel, Hochdahler Markt	7
11. Petiole: width (+)	Pétiole: largeur	Blattstiel: Breite	Pecíolo: anchura		
narrow	étroit	schmal	estrecho		3
medium	moyen	mittel	medio	Cesar, Prinz	5
broad	large	breit	ancho	Bergers weisse Kugel	7
12. Petiole: anthocyanin coloration (* (+)	Pétiole: pigmentation anthocyanique	Blattstiel: Anthocyanfärbung	Pecíolo: pigmentación antociánica		
absent	absente	fehlend	ausente	Mars, Neve	1
present	présente	vorhanden	presente	Bergers weisse Kugel, Geant Danois, Hochdahler Markt	9
13. Leaf blade: size of terminal leaflet (* (+)	Limbe: taille de la foliole terminale	Blattspreite: Größe der Endfieder	Limbo: tamaño del folíolo superior		
small	petite	klein	pequeño	Ortho	3
medium	moyenne	mittel	medio	Ibis, Kojak	5
large	grande	groß	grande		7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14. Leaflet: shape of tips of margin (+)	Foliolle: forme des pointes du bord	Blattfieder: Form der Spitzen des Randes	Folíolo: forma de las puntas del borde		
pointed	pointues	zugespitzt	puntiaguda	Dolvi, Ibis	1
intermediate	intermédiaires	intermediär	intermedia	Monarch, President, Prinz	2
rounded	arrondies	abgerundet	redondeada	Radiant	3
15. Leaflet: density of margin incisions (+)	Foliolle: densité des incisions du bord	Blattfieder: Dichte der Randeinschnitte	Folíolo: densidad de las incisiones del borde		
sparse	lâche	locker	laxa	Cesar, Hans, Rex	3
medium	moyenne	mittel	media	Ibis, Prinz	5
dense	dense	dicht	densa	Diamant, Kojak	7
16. Leaflet: spacing of lobes (*) (+)	Foliolle: espacement entre les lobes	Blattfieder: Abstand zwischen den Lappen	Folíolo: espaciado entre los lóbulos		
not touching	ne se touchent pas	sich nicht berührend	sin tocarse	Cascade	1
touching	se touchent	sich berührend	tocándose	Monarch	2
overlapping	se chevauchent	überlappend	solapados	Kojak	3
17. Tuber: size (*)	Tubercule: taille	Knolle: Größe	Tubérculo: tamaño		
small	petit	klein	pequeño	Ofir	3
medium	moyen	mittel	medio	Anita, Bergers weisse Kugel, Des Maraichers	5
large	grand	groß	grande	Ibis, Neve	7

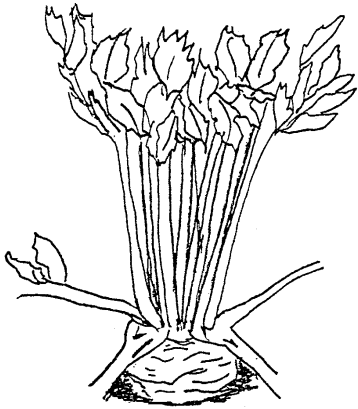
English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
18. Tuber: protrusion (+)	Tubercule: protubérance	Knolle: Wulstbildung	Tubérculo: protuberancia		
absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil		1
weak	faible	gering	débil	Ortho	3
medium	moyenne	mittel	media	Bergers weisse Kugel, Monarch, President	5
strong	forte	stark	fuerte	Anita, Boule de Marbre, Dolvi	7
very strong	très forte	sehr stark	muy fuerte		9
19. Tuber: main color of skin (*)	Tubercule: couleur principale de l'épiderme	Knolle: Hauptfarbe der Haut	Tubérculo: color principal de la epidermis		
whitish	blanchâtre	weißlich	blanquecino	Mars, Monarch, Neve	1
brown	brune	braun	marrón	Anita, Bergers weisse Kugel, Des Maraichers	2
20. <u>Varieties with tubers with brown main color only:</u> Tuber: intensity of main color of skin	<u>Seulement les variétés dont la couleur principale du tubercule est brune:</u> Tubercule: intensité de la couleur principale de l'épiderme	<u>Nur Sorten mit brauner Hauptfarbe der Knolle:</u> Knolle: Intensität der Hauptfarbe der Haut	<u>Sólo para variedades con tubérculos de color principal marrón:</u> Tubérculo: intensidad del color principal de la epidermis		
light	claire	hell	claro	Anita	3
medium	moyenne	mittel	medio	Ortho	5
dark	foncée	dunkel	oscuro	Balder	7
21. Tuber: insertion of roots (*) (+)	Tubercule: insertion des racines	Knolle: Wurzelansatz	Tubérculo: inserción de raíces		
low	basse	tief	baja	Cesar, Ortho	3
medium	moyenne	mittel	media	Hochdahler Markt, Monarch	5
high	haute	hoch	alta		7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
22. Tuber: number of roots	Tubercule: quantité de racines	Knolle: Anzahl Wurzeln	Tubérculo: cantidad de raíces		
few	petite	gering	pequeña	Cesar, Ortho	3
medium	moyenne	mittel	media	Bergers weisse Kugel, Brilliant, Monarch	5
many	grande	groß	grande		7
23. Tuber: thickness of roots	Tubercule: épaisseur des racines	Knolle: Wurzeldicke	Tubérculo: grosor de las raíces		
thin	minces	dünn	delgadas	Cesar, Ortho	3
medium	moyennes	mittel	medias	Bergers weisse Kugel, Diamant, Monarch	5
thick	épaisses	dick	gruesas	Hochdahler Markt	7
24 Tuber: shape in (*) longitudinal section (+)	Tubercule: forme en coupe longitudinale	Knolle: Form im Längsschnitt	Tubérculo: forma en sección longitudinal		
broad elliptic	elliptique large	breit elliptisch	elíptico ancho	Kojak	1
round	rond	rund	redondo	Monarch	2
transverse broad elliptic	elliptique transversal large	quer breit elliptisch	elíptico transversal ancho	Anita, Bergers weisse Kugel	3
truncate conical	conique tronqué	stumpf kegelförmig	de cono truncado	Dolvi	4
flattened truncated conical	conique tronqué aplati	flach stumpf kegelförmig	de cono truncado aplanado	Alabaster 3	5
25. Tuber: color of flesh (*)	Tubercule: couleur de la chair	Knolle: Fleischfarbe	Tubérculo: color de la pulpa		
white	blanche	weiß	blanco	Diamant, Monarch	1
ivory	ivoire	elfenbein	marfil	Hochdahler Markt, Ofir	2
26. Tuber: inner cavity	Tubercule: cavité intérieure	Knolle: Innerer Hohlraum	Tubérculo: cavidad interior		
small	petite	klein	pequeña		3
medium	moyenne	mittel	media	Mars	5
large	grande	groß	grande	Ortho	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27. Tuber: sponginess	Tubercule: spongiosité	Knolle: Schwammigkeit	Tubérculo: esponjosidad		
weak	faible	gering	débil	Monarch, Prinz	3
medium	moyenne	mittel	media	Bergers weisse Kugel, Cesar	5
strong	forte	stark	fuerte	Ortho	7
28. Tuber: internal rust spot of flesh (+)	Tubercule: présence de taches brunes dans la chair	Knolle: Eisenfleckigkeit des Fleisches	Tubérculo: presencia de manchas marrones en la pulpa		
weak	faible	gering	débil	Brilliant, Monarch	3
medium	moyenne	mittel	media	Bergers weisse Kugel, Mars	5
strong	forte	stark	fuerte	Ortho	7

VIII. Explanations on the Table of Characteristics

Ad. 2: Foliage: attitude



1
erect

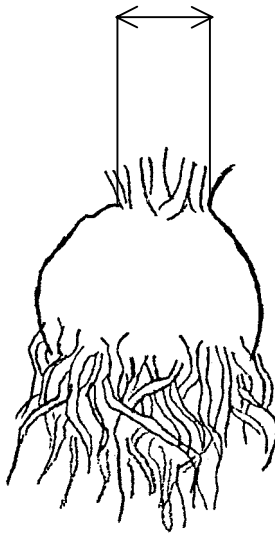


3
semi-erect



5
horizontal

Ad. 4: Foliage: diameter of petiole insertion on tuber



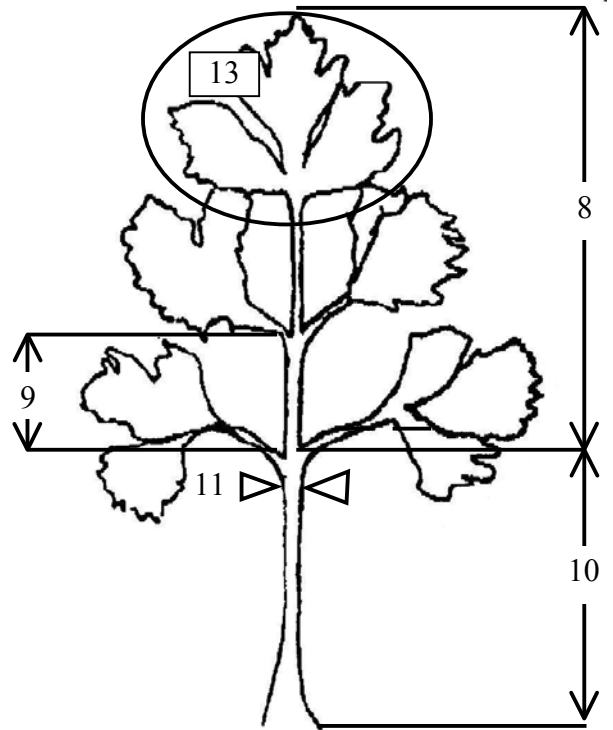
Ad. 8, 9, 10, 11, 13

Leaf blade: length(8)

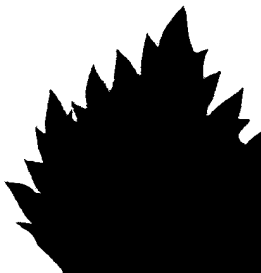
Leaf blade: distance between
1st and 2nd pair of
leaflets (9)

Petiole: length (10)
width (11)

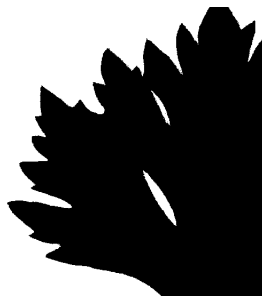
Leaf: size of the terminal leaflet (13)



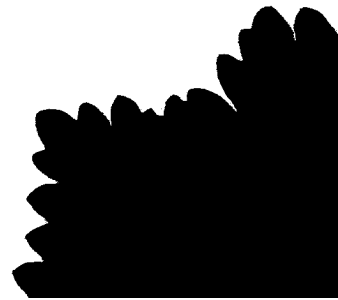
Ad. 14: Leaflet: shape of tips of margin



1
pointed

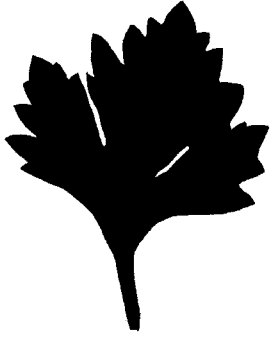


2
intermediate

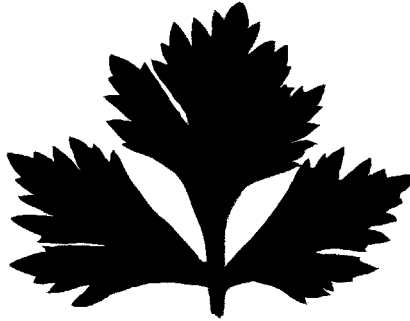


3
rounded

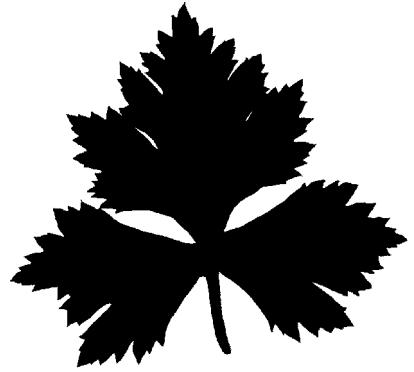
Ad. 15: Leaflet: density of margin incisions



3
sparse

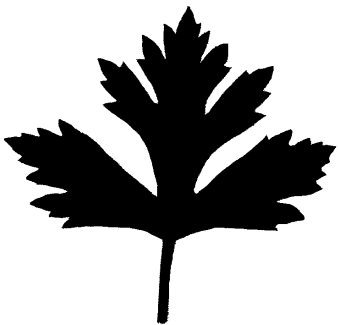


5
medium

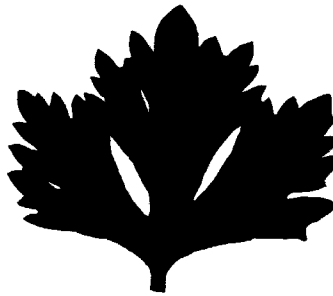


7
dense

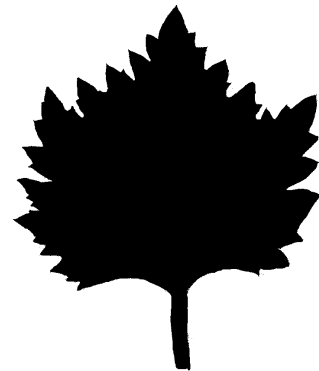
Ad. 16: Leaflet: spacing of lobes



1
not touching

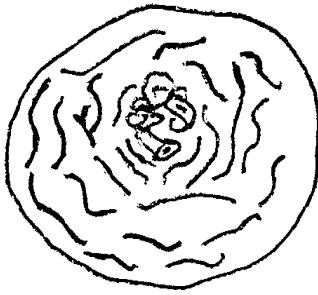


2
touching

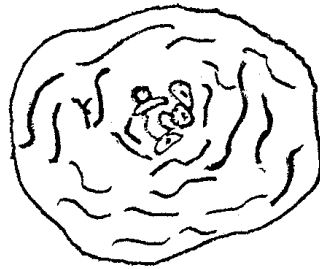


3
overlapping

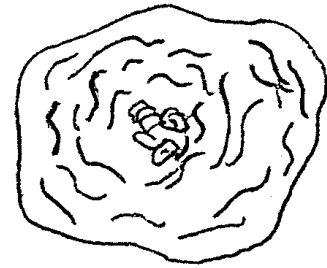
Ad. 18: Tuber: protrusion



3
weak



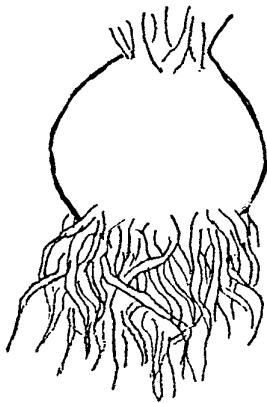
5
medium



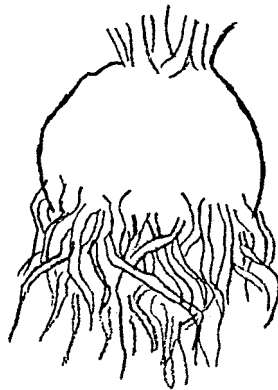
7
strong

Protrusions are raised/heightened insertion points of the main roots, which result in a more irregular shape, when viewed from above, as their intensity increases.

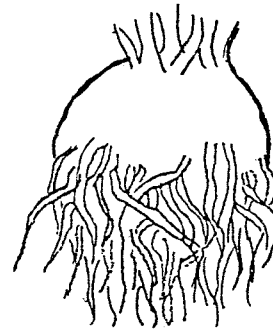
Ad. 21: Tuber: insertion of roots



3
low

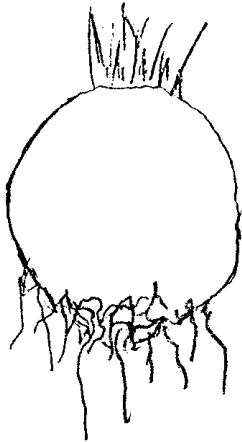


5
medium

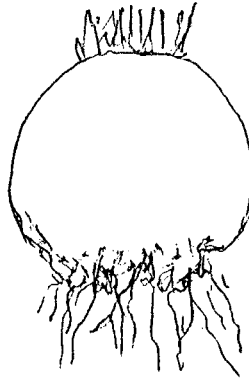


7
high

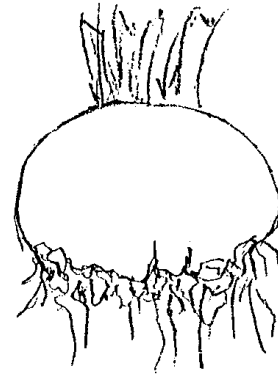
Ad. 24: Tuber: shape in longitudinal section



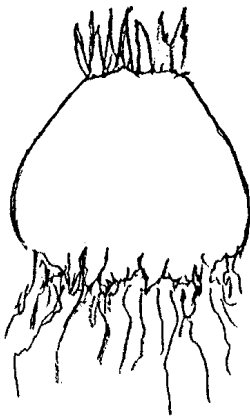
1
broad elliptic



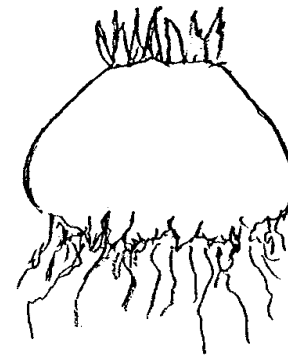
2
round



3
transverse broad elliptic



4
truncate conical



5
flattened truncated conical

Ad. 28: Tuber: internal rust spot of flesh

The flesh should be assessed for internal rust spots, one hour after cutting the tuber in longitudinal section.

IX. Literature

BECKER, G. (1962): Knollensellerie in: Handbuch der Pflanzenzüchtung, Band VI, 2. Auflage, Parey Verlag, Berlin – Hamburg, 104-130.

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

HAHN, P. und SCHMITT, U. (1951): Knollensellerie in: Kohl- und Wurzelgemüse, Arten- und Sortenkunde, Band 2, 1. Auflage, Deutscher Bauernverlag, Berlin, 246-255.

KAMPE, K.; BASSE, H.; GLASCHKE, B. und SCHREIBER, F. (1956): Sellerie in: Gemüsesorten, II. Teil (Kohl-, Blatt- und Wurzelgemüse), 1. Auflage, Parey Verlag, Berlin – Hamburg, 115-119.

VOGEL, G. (1996): Sellerie in: Handbuch des speziellen Gemüsebaus. Ulmer Verlag, Stuttgart, 975-990.

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

WIEBE, H.-J.(1998): Blütenbildung von Knollensellerie (*Apium graveolens* L. var. *rapaceum*). I. Vernalisation und Devernalisation. Gartenbauwissenschaft 63 (4), Ulmer Verlag, Stuttgart, 171-177.

X. 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. Species	<p><i>Apium graveolens</i> L. var. <i>rapaceum</i> (Mill.) Gaud. CELERIAC</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 | [] |
| (iii) | others (please indicate) | [] |

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	Ofir	3 []
medium	Ibis, Monarch	5 []
tall	Bergers weisse Kugel, Boule de Marbre, Mars	7 []
5.2 Foliage: attitude (2)		
erect	Mars	1 []
erect to semi-erect	Bergers weisse Kugel, Monarch	2 []
semi-erect	Anita, Ibis	3 []
semi-erect to horizontal	Ofir	4 []
horizontal	Ilona	5 []
5.3 Petiole: anthocyanin coloration (12)		
absent	Mars, Neve	1 []
present	Bergers weisse Kugel, Geant Danois, Hochdahler Markt	9 []
5.4 Leaf blade: size of terminal leaflet (13)		
small	Ortho	3 []
medium	Ibis, Kojak	5 []
large		7 []
5.5 Leaflet: shape of tips of margin (14)		
pointed	Dolvi, Ibis	1 []
intermediate	Monarch, President, Prinz	2 []
rounded	Radiant	3 []

Characteristics	Example Varieties	Note
5.6 Leaflet: spacing of lobes (16)		
not touching	Cascade	1 []
touching	Monarch	2 []
overlapping	Kojak	3 []
5.7 Tuber: size (17)		
small	Ofir	3 []
medium	Anita, Bergers weisse Kugel, Des Maraichers	5 []
large	Ibis, Neve	7 []
5.8 Tuber: main color of skin (19)		
whitish	Mars, Monarch, Neve	1 []
brown	Anita, Bergers weisse Kugel, Des Maraichers	2 []
5.9 Tuber: insertion of roots (21)		
low	Cesar, Ortho	3 []
medium	Hochdahler Markt, Monarch	5 []
high		7 []
5.10 Tuber: shape in longitudinal section (24)		
broad elliptic	Kojak	1 []
round	Monarch	2 []
transverse broad elliptic	Anita, Bergers weisse Kugel	3 []
truncate conical	Dolvi	4 []
flattened truncated conical	Alabaster 3	5 []
5.11 Tuber: color of flesh (25)		
white	Diamant, Monarch	1 []
ivory	Hochdahler Markt, Ofir	2 []

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 of the variety in original size may be included in the Technical Questionnaire.

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.

[End of document]