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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

PARSNIP

UPOV Code: PASTI_SAT

Pastinaca sativa L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from the United Kingdom

to be considered by the

Enlarged Editorial Committee at its meeting
to be held in Geneva, on January 11 and 12, 2012

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Pastinaca sativa L.	Parsnip	Panais	Pastinake	Chirivía

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 Test Guidelines should be read in conjunction with 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 *Pastinaca sativa* L.

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 15,000 seeds.

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.

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 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

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.

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 200 plants, which should be divided between at least two 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 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.

4.1.4 Numbers of Plants / Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 60 plants or parts taken from each of 60 plants and any other observations made on all plants in the test, disregarding any off-type plants.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the second column of the Table of Characteristics (see document TGP/9 "Examining Distinctness", Section 4 "Observation 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

Type of observation: visual (V) or measurement (M)

"Visual" observation (V) is an observation made on the basis of the expert's judgment. For the purposes of this document, "visual" observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness."

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

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:

(a) Cross-pollinated varieties

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.

(b) Hybrid varieties/Inbred lines

4.2.3 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 200 plants, 7 off-types are allowed. In

addition, for hybrids, the same population standard and acceptance probability should be applied to clearly recognizable inbred plants. In the case of a sample size of 200 plants, 7 clearly recognizable inbred plants 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 further examined by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the initial 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) Root: length (characteristic 14)
(b) Root: width (characteristic 15)
(c) Root: shape (characteristic 17)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 “Examining Distinctness”.

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

6.2.1 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.

6.2.2 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	Note
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 “Development of Test Guidelines”.

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 6.1.2

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

MG, MS, VG, VS: See Chapter 4.1.5

(a) See Explanations on the Table of Characteristics in Chapter 8.1

(+) See Explanations on the Table of Characteristics in Chapter 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.	**VG**	**Foliage: attitude**	**Feuillage: port**	**Laub: Haltung**	**Follaje: porte**		
QN		erect	dressé	aufrecht	erecto	MS 2	1
		erect to semi erect	dressé à demi-dressé	aufrecht bis halbaufrecht	erecto a semierecto	Countess	2
		semi erect	demi-dressé	halbaufrecht	semierecto	Gladiator	3
		semi erect to prostrate	demi-dressé à étalé	halbaufrecht bis liegend	semierecto a postrado	Guernsey	4
		prostrate	étalé	liegend	postrado		5
2.	**VG**	**Foliage: intensity of green color**	**Feuillage: intensité de la couleur verte**	**Laub: Intensität der Grünfärbung**	**Follaje: intensidad del color verde**		
QN		light	claire	hell	claro	P20	3
		medium	moyenne	mittel	medio	Alba, Guernsey	5
		dark	foncée	dunkel	oscuro	Andover	7
3.	**VG**	**Foliage: glossiness**	**Feuillage: brillance**	**Laub: Glanz**	**Follaje: brillo**		
QN		weak	faible	gering	débil	Avonresister	3
		medium	moyenne	mittel	medio	Polar	5
		strong	forte	stark	fuerte	Sport	7
4. **(+)**	**VG/ MS**	**Foliage: width of basal leaves at crown**	**Feuillage: largeur des feuilles basales de la partie supérieure**	**Laub: Breite der basalen Blätter an der Krone**	**Follaje: anchura de las hojas basales de la corona**		
QN		narrow	étroite	schmal	estrecha	Alba	3
		medium	moyenne	mittel	media	New White Skin	5
		broad	large	breit	ancha	Tender and True	7
5.	**VG**	**Foliage: blistering**	**Feuillage: cloqûre**	**Laub: Blasigkeit**	**Follaje: abullonado**		
QN		weak	faible	gering	débil	Imperial Crown	3
		medium	moyenne	mittel	medio	Avonresister	5
		strong	forte	stark	fuerte	Paragon	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
6. (*) (+)	**VG/ MS**	**Leaf: length**	**Feuille: longueur**	**Blatt: Länge**	**Hoja: longitud**		
QN	**(a)**	short	courte	kurz	corta	Alba	3
		medium	moyenne	mittel	media	New White Skin	5
		long	longue	lang	larga	Tenor	7
7. (*) (+)	**VG/ MS**	**Leaf: width**	**Feuille: largeur**	**Blatt: Breite**	**Hoja: anchura**		
QN	**(a)**	narrow	étroite	schmal	estrecha	Arrow	3
		medium	moyenne	mittel	media	New White Skin	5
		broad	large	breit	ancha	Tenor	7
8. (+)	**MS**	**Leaf: distance from widest point to tip**	**Feuille: distance du point le plus large au sommet**	**Blatt: Abstand von breitester Stelle bis zur Spitze**	**Hoja: distancia del punto mas ancho al extremo**		
QN	**(a)**	short	petite	klein	pequeña	Alba	3
		medium	moyenne	mittel	media	Avonresister	5
		long	grande	groß	grande	Picador	7
9. (+)	**VG**	**Leaflet: division**	**Foliole: division**	**Blattfieder: Fiederung**	**Folíolo: división**		
QN	**(a)**	weak	faible	gering	débil	Countess	3
		medium	moyenne	mittel	media	White King	5
		strong	forte	stark	fuerte	Picador	7
10.	**VG**	**Leaflet: dentation of margin**	**Foliole: dentelure du bord**	**Blattfieder: Zähnung des Randes**	**Folíolo: dentado del borde**		
QN	**(a)**	weak	faible	gering	débil	Sport	3
		medium	moyenne	mittel	medio	Javelin	5
		strong	forte	stark	fuerte	Countess	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
11. (+)	**VG/ MS**	**Leaflet: size**	**Foliole: taille**	**Blattfieder: Größe**	**Folíolo: tamaño**		
QN	**(a)**	small	petite	klein	pequeño	Arrow	3
		medium	moyenne	mittel	medio	Tenor	5
		large	grande	groß	grande	Picador	7
12.	**VG**	**Petiole: intensity of anthocyanin coloration**	**Pétiole: intensité de la pigmentation anthocyanique**	**Blattstiel: Stärke der Anthocyanfär-bung**	**Pecíolo: intensidad de la pigmentación antociánica**		
QN		weak	faible	gering	débil	Tender and True	3
		medium	moyenne	mittel	media	White Gem	5
		strong	forte	stark	fuerte	MS2	7
13. (*) (+)	**VG/ MS**	**Petiole: length**	**Pétiole: longueur**	**Blattstiel: Länge**	**Pecíolo: longitud**		
QN		short	courte	kurz	corto	Kral	3
		medium	moyenne	mittel	medio	New White Skin	5
		long	longue	lang	largo	Countess	7
14. (*) (+)	**VG/ MS**	**Root: length**	**Racine: longueur**	**Rübe: Länge**	**Raíz: longitud**		
QN		short	courte	kurz	corta	Alba	3
		medium	moyenne	mittel	media	White Gem	5
		long	longue	lang	larga	Paragon	7
15. (*) (+)	**VG/ MS**	**Root: width**	**Racine: largeur**	**Rübe: Breite**	**Raíz: anchura**		
QN		narrow	étroite	schmal	estrecha	Fist	3
		medium	moyenne	mittel	media	White Gem	5
		broad	large	breit	ancha	Picador	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
16. **(+)**	**MS**	**Root: distance from widest point to crown**	**Racine: distance du point le plus large à la partie supérieure**	**Rübe: Abstand von breitester Stelle bis zur Krone**	**Raíz: distancia del punto mas ancho a la corona**		
QN		short	courte	kurz	corta	Andover	3
		medium	moyenne	mittel	media	Tender and True	5
		long	longue	lang	larga	Avonresister, White King	7
17. **(*)** **(+)**	**VG**	**Root: shape**	**Racine: forme**	**Rübe: Form**	**Raíz: forma**		
PQ		narrow obtriangular	obtriangulaire étroite	schmal verkehrt dreieckig	obtriangular estrecha	Fist	1
		obtriangular	obtriangulaire	verkehrt dreieckig	obtriangular	Countess	2
		broad obtriangular	obtriangulaire large	breit verkehrt dreieckig	obtriangular ancha	Tenor	3
		obovate	obovale	verkehrt eiförmig	oboval	Merlin	4
		broad obovate	obovale large	breit verkehrt eiförmig	oboval ancha	White King	5
		napiform	napiforme	rübenförmig	napiforme	Kral, Rotund	6
18. **(*)** **(+)**	**VG**	**Root: depth of crown depression**	**Racine: profondeur de la dépression de la partie supérieure**	**Rübe: Tiefe der Einsenkung der Krone**	**Raíz: profundidad de la depresión de la corona**		
QN		absent or very shallow	nulle ou très peu profonde	fehlend oder sehr flach	ausente o muy poco profunda	Kral	1
		shallow	peu profonde	flach	poco profunda	Polar	3
		medium	moyenne	mittel	media	Gladiator	5
		deep	profonde	tief	profunda	Avonresister, White King	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
19. (+)	**VG**	**Root: width of crown depression**	**Racine: largeur de la dépression de la partie supérieure**	**Rübe: Breite der Einsenkung der Krone**	**Raíz: anchura de la depresión de la corona**		
QN		absent or very narrow	nulle ou très étroite	fehlend oder sehr schmal	ausente o muy estrecha	Kral	1
		narrow	étroite	schmal	estrecha	Alba	3
		medium	moyenne	mittel	media	Countess	5
		broad	large	breit	ancha	Tenor	7
20.	**VG**	**Root: external color**	**Racine: couleur externe**	**Rübe: Außenfarbe**	**Raíz: color externo**		
PQ		white	blanche	weiß	blanco	New White Skin	1
		whitish cream	crème blanchâtre	weißlich cremefarben	crema blanquecino	Gladiator	2
		cream	crème	cremefarben	crema	Avonresister	3
21.	**VG**	**Root: surface**	**Racine: surface**	**Rübe: Oberfläche**	**Raíz: superficie**		
QN		very smooth	très lisse	sehr glatt	muy lisa	Countess	1
		smooth	lisse	glatt	lisa	Javelin	3
		medium	moyenne	mittel	media	White King	5
		rough	rugueuse	rauh	rugosa	Avonresister	7
		very rough	très rugueuse	sehr rauh	muy rugosa	Exhibition Long	9
22. (+)	**VG/ MS**	**Root: core width**	**Racine: largeur du cœur**	**Rübe: Breite der Mittelzone**	**Raíz: anchura del corazón**		
QN		narrow	étroit	schmal	estrecho	Arrow	3
		medium	moyen	mittel	medio	New White Skin	5
		broad	large	breit	ancho	White King	7
23. (+)	**VG**	**Male sterility**	**Stérilité mâle**	**Männliche Sterilität**	**Esterilidad masculina**		
QL		absent	absente	fehlend	ausente	New White Skin	1
		present	présente	vorhanden	presente	Palace	9

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 leaf and the leaflet should be made on fully developed plants.

8.2 Explanations for individual characteristics

Ad. 9: Leaflet: division

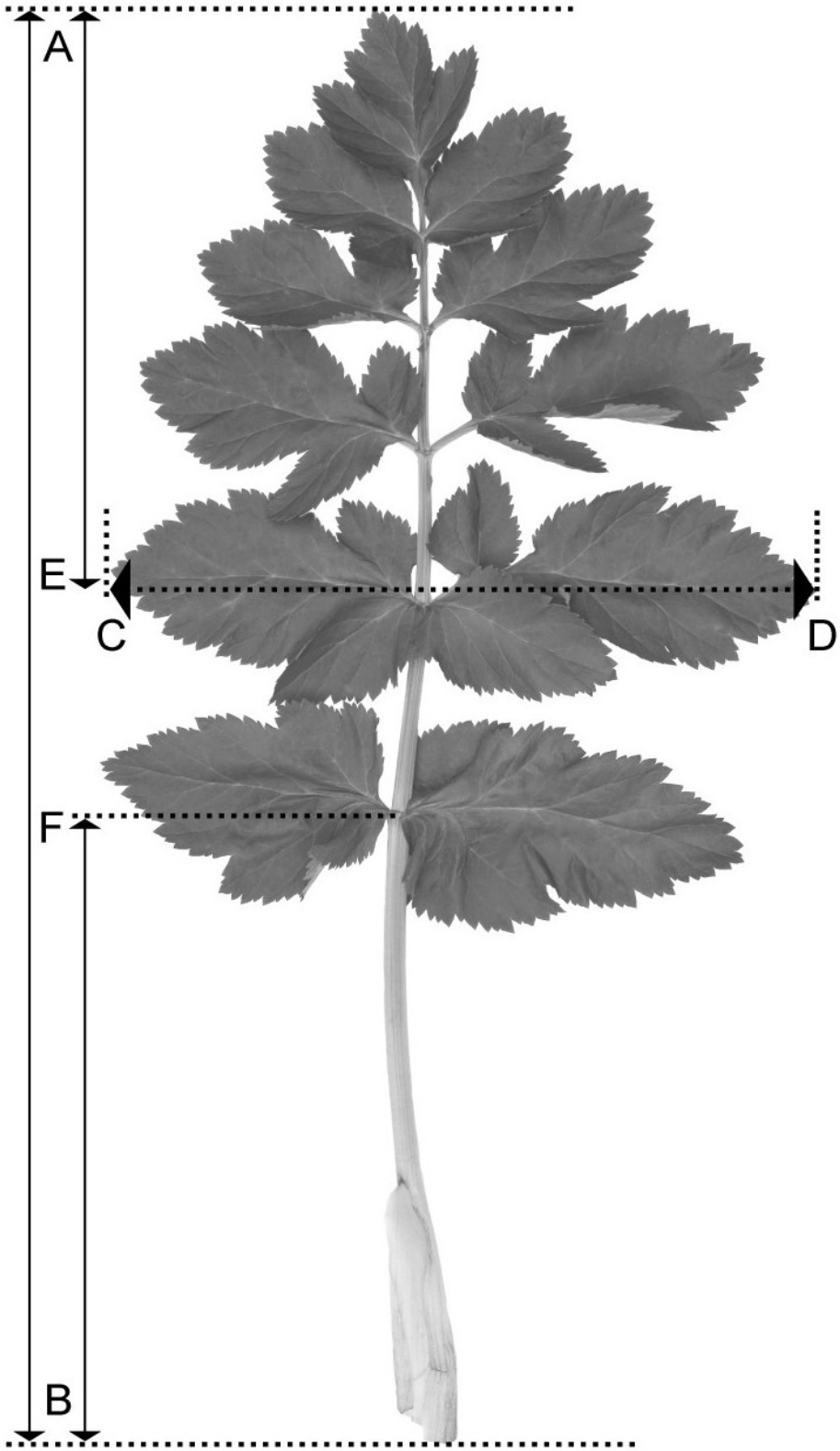
Assessment should be made on the second leaflet on one side of the midrib for each leaf recorded.

3	4	5	6	7
weak	weak to medium	medium	medium to strong	strong

Ad. 11: Leaflet: size

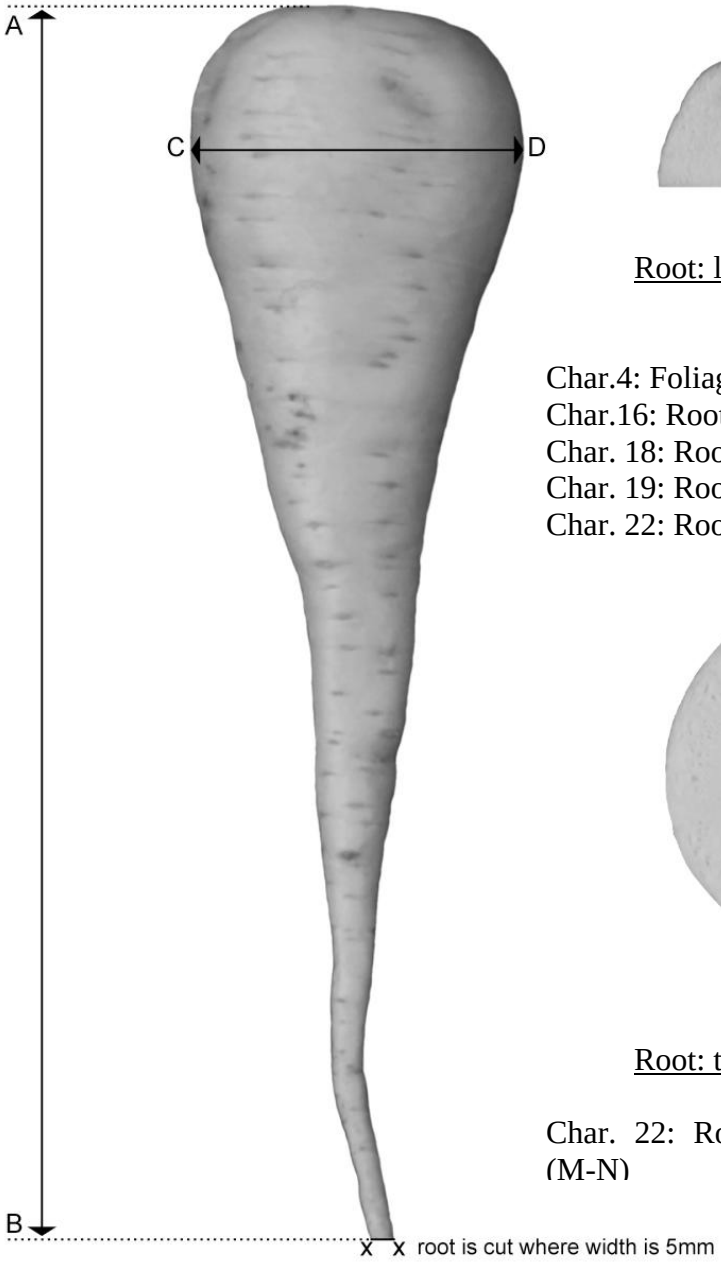
Leaflet size refers to the area of the leaflet. Assessment should be made on the second leaflet from the bottom on one side of the midrib for each leaf recorded.

Ad. 6: Leaf: length
Ad. 7: Leaf: width
Ad. 8: Leaf: distance from widest point to top
Ad. 13: Petiole: length

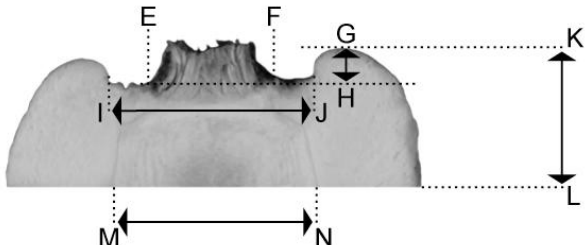


Ad. 6: Leaf: length (A – B)
Ad. 7: Leaf: width (C – D)
Ad. 8: Leaf: distance from widest point to tip (A – E)
Ad. 13: Petiole: length (B – F)

Ad. 4: Foliage: width of basal leaves at crown
Ad. 14, 15, 16, 18, 19, 22: Root characteristics

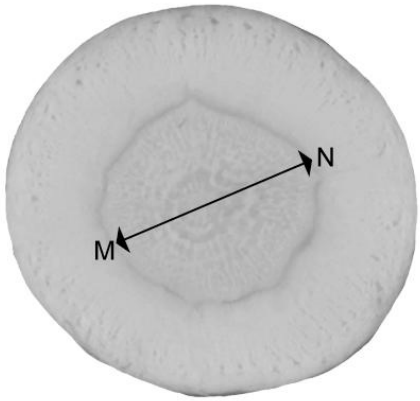


Char. 14: Root: length (A-B)
Char. 15: Root: width (C-D)



Root: longitudinal section (crown to widest point)

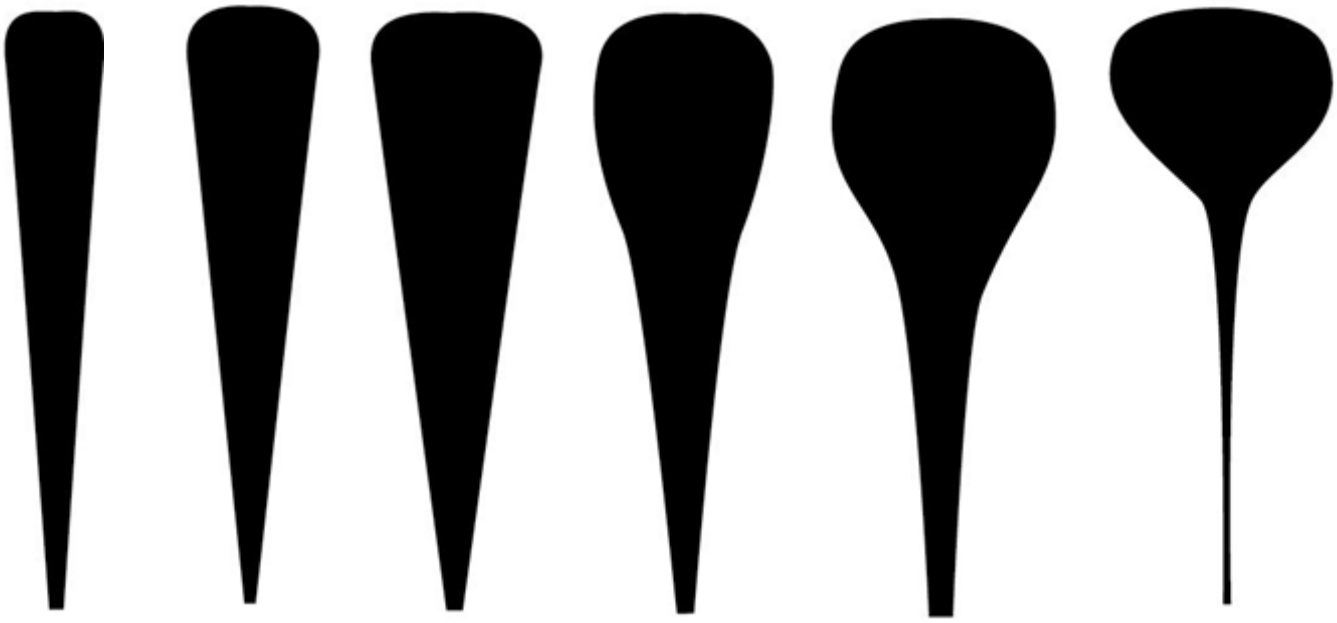
Char.4: Foliage: width of basal leaves at crown (E-F)
Char.16: Root: distance from widest point to crown (K-L)
Char. 18: Root: depth of crown depression (G-H)
Char. 19: Root: width of crown depression (I-J)
Char. 22: Root: core width at widest point of root (M-N)



Root: transverse section at widest point

Char. 22: Root: core width (at widest point of root) (M-N)

Ad. 17: Root: shape



1	2	3	4	5	6
narrow obtriangular	obtriangular	broad obtriangular	obovate	broad obovate	napiform

Ad. 23: Male sterility

The observation of male sterility should be made on the primary umbel when all flowers on the primary umbel are open. Male sterility is present if no pollen is produced. Visual inspection of the anthers or tapping the flower head over a dark card can be used to confirm the presence or absence of pollen.

Initially 15 roots of each variety to be assessed should be grown on to flowering, with further roots examined only if non-male sterile plants are observed.

9. Literature

Rubatzky, V.E., Quiros, C.F., Simon, P.W. 1999: "Carrots and Related Vegetable *Umbelliferae.*" Crop Production science in horticulture series 10. CAB International, Wallingford, UK. ISBN 0 85199 129 7

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	*Pastinaca sativa* L.
1.2 Common Name	Parsnip

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 [ ]
(please state parent variety)

4.1.2 Mutation [ ]
(please state parent variety)

4.1.3 Discovery and development [ ]
(please state where and when discovered and how developed)

4.1.4 Other [ ]
(please provide details)

[*] 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:

4.2 Method of propagating the variety

(a) Self-pollination [ ]

(b) Cross-pollination
(i) population [ ]
(ii) synthetic variety [ ]

(c) Hybrid [ ]

(d) 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 (6)	**Leaf: length**		
	very short		1[ ]
	very short to short		2[ ]
	short	Alba	3[ ]
	short to medium		4[ ]
	medium	New White Skin	5[ ]
	medium to long		6[ ]
	long	Tenor	7[ ]
	long to very long		8[ ]
	very long		9[ ]
5.2 (12)	**Petiole: intensity of anthocyanin coloration**		
	very weak		1[ ]
	very weak to weak		2[ ]
	weak	Tender and True	3[ ]
	weak to medium		4[ ]
	medium	White Gem	5[ ]
	medium to strong		6[ ]
	strong	MS2	7[ ]
	strong to very strong		8[ ]
	very strong		9[ ]

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	Characteristics	Example Varieties	Note
5.3 (14)	**Root: length**		
	very short		1[ ]
	very short to short		2[ ]
	short	Alba	3[ ]
	short to medium		4[ ]
	medium	White Gem	5[ ]
	medium to long		6[ ]
	long	Paragon	7[ ]
	long to very long		8[ ]
	very long		9[ ]
5.4 (15)	**Root: width**		
	very narrow		1[ ]
	very narrow to narrow		2[ ]
	narrow	Fist	3[ ]
	narrow to medium		4[ ]
	medium	White Gem	5[ ]
	medium to broad		6[ ]
	broad	Picador	7[ ]
	broad to very broad		8[ ]
	very broad		9[ ]

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

	Characteristics	Example Varieties	Note
5.5 (17)	**Root: shape**		
	narrow obtriangular	Fist	1[ ]
	obtriangular	Countess	2[ ]
	broad obtriangular	Tenor	3[ ]
	obovate	Merlin	4[ ]
	broad obovate	White King	5[ ]
	napiform	Kral, Rotund	6[ ]
5.6 (20)	**Root: external color**		
	white	New White Skin	1[ ]
	whitish cream	Gladiator	2[ ]
	cream	Avonresister	3[ ]
5.7 (21)	**Root: surface**		
	very smooth	Countess	1[ ]
	very smooth to smooth		2[ ]
	smooth	Javelin	3[ ]
	smooth to medium		4[ ]
	medium	White King	5[ ]
	medium to rough		6[ ]
	rough	Avonresister	7[ ]
	rough to very rough		8[ ]
	very rough	Exhibition Long	9[ ]
5.8 (23)	**Male sterility**		
	absent	New White Skin	1[ ]
	present	Palace	9[ ]

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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
Example	*Root: external color*	*whitish cream*	*cream*

Comments:

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

[#]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 Are there any special conditions for growing the variety or conducting the examination?

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

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

[#] 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:

9. Information on plant material to be examined or submitted for examination.

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, pesticide) Yes [ ] No [ ]

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

Please provide details for 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]