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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

TURNIP

UPOV Code(s): BRASS_RAP_RAP

Brassica rapa L. var. *rapa*

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from France

to be considered by the

Technical Committee at its fifty-seventh session
to be held in Geneva on October 25 and 26, 2021

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Brassica rapa L. var. *rapa*	Turnip	Navet	Herbstrübe, Mairübe	Nabo

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.

Other associated UPOV documents: TG/185 Turnip rape

* 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 *Brassica rapa* L. var. *rapa*.

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:

20 g or 10,000 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

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

3.1.2 The two independent growing cycles should be in the form of two separate plantings.

3.1.3 The testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.

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

3.3.1 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.

3.3.2 The optimum stage of development for the assessment of each characteristic is indicated by a number in the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.3.

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 60 plants, which should be divided between at least 2 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 Number of Plants or Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 40 plants or parts of plants taken from each of 40 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 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:

4.2.2 These Test Guidelines have been developed for the examination of seed-propagated varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.

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

4.2.4 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.

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 are 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) Ploidy (characteristic 1)
(b) Petiole: intensity of anthocyanin coloration (characteristic 2)
(c) Leaf: number of lobes (characteristic 6)
(d) Root: degree of swelling (characteristic 15)
(e) Only varieties with Root: degree of swelling: medium or strong: Root: color of skin above soil (characteristic 16)
(f) Only varieties with Root: degree of swelling: medium or strong: Root: color of skin below soil (characteristic 18)
(g) Only varieties with Root: degree of swelling: medium or strong: Root: color of flesh (characteristic 19)
(h) Only varieties with Root: degree of swelling: medium or strong: Root: shape in longitudinal section (characteristic 22)

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 All relevant states of expression are presented in the characteristic.

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1 **2**	**3** **4**	**5** **6**	**7**			
	Name of characteristics in English	**Nom du caractère en français**	**Name des Merkmals auf Deutsch**	**Nombre del carácter en español**		
	states of expression	types d'expression	Ausprägungsstufen	tipos de expresión		

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression
QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)
MG, MS, VG, VS – see Chapter 4.1.5

5 (+) See Explanations on the Table of Characteristics in Chapter 8.2

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

7 Growth stage key See Explanations on the Table of Characteristics in Chapter 8.3

Types of example varieties:

(A) Swelling root absent or weak
(S) Swelling root medium or strong

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	**(*) QL VG/VS**		**(+)**	**00-60**			
		Ploidy	**Ploïdie**	**Ploidie**	**Ploidía**		
		diploid	diploïde	diploid	diploide	Milan White (S)	2
		tetraploid	tétraploïde	tetraploid	tetraploide	Taronda (S)	4
2.	**(*) QN VG**		**(+)**	**100-130**			
		Petiole: intensity of anthocyanin coloration	**Pétiole : intensité de la pigmentation anthocyanique**	**Blattstiel: Intensität der Anthocyanfärbung**	**Pecíolo: intensidad de la pigmentación antociánica**		
		absent or very weak	nulle ou très faible	fehlend oder schwach	ausente o muy débil	Delilah (S), Long d'Alsace (S)	1
		weak	faible	schwach	débil	Kranjska Podolgovata (S), Simax (A)	2
		medium	moyenne	mittel	media	Samson (S)	3
		strong	forte	stark	fuerte		4
		very strong	très forte	sehr stark	muy fuerte	Scarlet Queen Red Stem (S)	5
3.	**QN VG**		**(+)** **(a)**	**100-130**			
		Leaf: attitude	**Limbe : port**	**Blatt: Haltung**	**Hoja: porte**		
		erect	dressé	aufrecht	erecto	Hinona (A), Samson (S)	1
		erect to semi-erect	dressé à demi-dressé	aufrecht bis halbaufrecht	erecto a semierecto		2
		semi-erect	demi-dressé	halbaufrecht	semierecto	Noir long (S), Agressa (S)	3
		semi-erect to prostrate	demi-dressé à étalé	halbaufrecht bis liegend	semierecto a postrado		4
		prostrate	étalé	liegend	postrado	Goldana (S), Richelieu (S), Teltower Kleine (S)	5
4.	**QN VG**		**(+)** **(a)**	**100-130**			
		Leaf: degree of recurving of the apex	**Feuille : degré de courbure de l'apex**	**Blatt: Grad der Rückbiegung des Apex**	**Hoja: grado de recurvado del ápice**		
		absent or very weak	nul ou très faible	fehlend oder sehr gering	ausente o muy débil	Milan White Forcing (S)	1
		very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil		2
		weak	faible	gering	débil	Declic (S), Fuku Komachi (S)	3
		weak to medium	faible à moyen	gering bis mittel	débil a medio		4
		medium	moyen	mittel	medio	Delilah (S)	5
		medium to strong	moyen à fort	mittel bis stark	medio a fuerte		6
		strong	fort	stark	fuerte	Simax (A)	7
		strong to very strong	fort à très fort	stark bis sehr stark	fuerte a muy fuerte		8
		very strong	très fort	sehr stark	muy fuerte		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.	**(*)**	**QN VG**	**(a)**	**100-130**			
		Leaf: intensity of green color	**Limbe : intensité de la couleur verte**	**Blatt: Intensität der Grünfärbung**	**Hoja: intensidad del color verde**		
		very light	très claire	sehr hell	muy clara		1
		very light to light	très claire à claire	sehr hell bis hell	muy clara a clara		2
		light	claire	hell	clara	Rondo (S)	3
		light to medium	claire à moyenne	hell bis mittel	clara a media		4
		medium	moyenne	mittel	media	Civasto R (S)	5
		medium to dark	moyenne à foncée	mittel bis dunkel	media a oscura		6
		dark	foncée	dunkel	oscura	Simax (A), Tokyo Top (S)	7
		dark to very dark	foncée à très foncée	dunkel bis sehr dunkel	oscura a muy oscura		8
		very dark	très foncée	sehr dunkel	muy oscura	Richelieu (S)	9
6.	**(*)**	**QN MS/VG**	**(a), (b)**	**100-130**			
		Leaf: number of lobes	**Feuille : nombre de lobes**	**Blatt: Anzahl Lappen**	**Hoja: número de lóbulos**		
		absent or very few	nul ou très petit	fehlend oder sehr wenige	ausente o muy bajo	Declic (S), Polybra (S), Simax (A)	1
		very few to few	très petit à petit	sehr wenige bis wenige	muy bajo a bajo		2
		few	petit	wenige	bajo	Tokyo Cross (S)	3
		few to medium	petit à moyen	wenige bis mittel	bajo a medio		4
		medium	moyen	mittel	medio	Blanc globe à collet violet (S), Richelieu (S)	5
		medium to many	moyen à grand	mittel bis viele	medio a alto		6
		many	grand	viele	alto	Civasto R (S)	7
		many to very many	grand à très grand	viele bis sehr viele	alto a muy alto		8
		very many	très grand	sehr viele	muy alto		9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
7.	**QN VG**	**(+) (a), (b)**	**100-130**			
	Only varieties with Leaf: number of lobes: absent or very few: Leaf: depth of the incisions of margin at basal part	**Uniquement variétés avec feuille : nombre de lobes : nul ou très petit : Feuille : profondeur des incisions du bord de la partie basale**	**Nur Sorten mit Blatt: Anzahl Lappen: fehlend oder sehr wenige: Blatt: Tiefe der Randeinschnitte des basalen Teils**	**Solo variedades con Hoja: número de lóbulos: nulo o muy bajo: Hoja: profundidad de las incisiones del borde en la parte basal**		
	absent or very shallow	absente ou très peu profonde	fehlend oder sehr flach	ausente o muy poco profunda	Declic (S)	1
	very shallow to shallow	très peu profonde à peu profonde	sehr flach bis flach	muy poco profunda a poco profunda		2
	shallow	peu profonde	flach	poco profunda	Agressa (S), Taronda (S)	3
	shallow to medium	peu profonde à moyenne	flach bis mittel	poco profunda a media		4
	medium	moyenne	mittel	media	De Nancy à feuille entière (S)	5
	medium to deep	moyenne à profonde	mittel bis tief	media a profunda		6
	deep	profonde	tief	profunda	Simax (A)	7
	deep to very deep	profonde à très profonde	tief bis sehr tief	profunda a muy profunda		8
	very deep	très profonde	sehr tief	muy profunda	Polybra (S)	9
8.	**QN VG**	**(+) (a)**	**100-130**			
	Leaf: undulation of margin	**Limbe : ondulation du bord**	**Blatt: Randwellung**	**Hoja: ondulación del borde**		
	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Tokyo Cross (S)	1
	very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil		2
	weak	faible	gering	débil	Simax (A), Tokyo Top (S)	3
	weak to medium	faible à moyenne	gering bis mittel	débil a media		4
	medium	moyenne	mittel	media	Rouge plat hâtif à feuille entière (S)	5
	medium to strong	moyenne à forte	mittel bis stark	media a fuerte		6
	strong	forte	stark	fuerte	Falko (S)	7
	strong to very strong	forte à très forte	stark bis sehr stark	fuerte a muy fuerte		8
	very strong	très forte	sehr stark	muy fuerte	Rondo (S)	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9.		**QN VG**	**(+) (a)**	**100-130**			
		Leaf: dentation of margin of upper part of the leaf	**Feuille : denture du bord de la partie supérieure de la feuille**	**Blatt: Zähnung des Randes des oberen Blattteils**	**Hoja: dentado del borde de la parte superior de la hoja**		
		absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	De Milan à forcer à collet rose (S)	1
		very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil		2
		weak	faible	gering	débil	Milan White (S)	3
		weak to medium	faible à moyenne	gering bis mittel	débil a medio		4
		medium	moyenne	mittel	medio	Polybra (S)	5
		medium to strong	moyenne à forte	mittel bis stark	medio a fuerte		6
		strong	forte	stark	fuerte	Greleiro Senhora Conceição (A), Taronda (S)	7
		strong to very strong	forte à très forte	stark bis sehr stark	fuerte a muy fuerte		8
		very strong	très forte	sehr stark	muy fuerte	Appin (S)	9
10.	**(*)**	**QN MS/VG**	**(a), (b)**	**100-130**			
		Leaf: length	**Feuille : longueur**	**Blatt: Länge**	**Hoja: longitud**		
		very short	très courte	sehr kurz	muy corta	De Milan à forcer à collet rose (S)	1
		very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta		2
		short	courte	kurz	corta	Milan White (S), Richelieu (S)	3
		short to medium	courte à moyenne	kurz bis mittel	corta a media		4
		medium	moyenne	mittel	media	Blanc globe à collet violet (S), Tokyo Cross (S)	5
		medium to long	moyenne à longue	mittel bis lang	media a larga		6
		long	longue	lang	larga	Greleiro Senhora Conceição (A)	7
		long to very long	longue à très longue	lang bis sehr lang	larga a muy larga		8
		very long	très longue	sehr lang	muy larga	Simax (A)	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11.	**QN MS/VG**	**(a), (b)**	**100-130**			
	Leaf: width	**Feuille : largeur**	**Blatt: Breite**	**Hoja: anchura**		
	very narrow	très étroite	sehr schmal	muy estrecha		1
	very narrow to narrow	très étroite à étroite	sehr schmal bis schmal	muy estrecha a estrecha		2
	narrow	étroite	schmal	estrecha	De Milan à forcer à collet rose (S), Milan White Forcing (S)	3
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media		4
	medium	moyenne	mittel	media	Appin (S), Tokyo Cross (S)	5
	medium to broad	moyenne à large	mittel bis breit	media a ancha		6
	broad	large	breit	ancha	Simax (A)	7
	broad to very broad	large à très large	breit bis sehr breit	ancha a muy ancha		8
	very broad	très large	sehr breit	muy ancha	Greleiro Senhora Conceição (A)	9
12.	**QN MS/VG**	**(a), (b)**	**100-130**			
	Leaf: length of terminal lobe	**Feuille : longueur du lobe terminal**	**Blatt: Länge des Endlappens**	**Hoja: longitud del lóbulo terminal**		
	very short	très courte	sehr kurz	muy corta		1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta		2
	short	courte	kurz	corta	Richelieu (S)	3
	short to medium	courte à moyenne	kurz bis mittel	corta a media		4
	medium	moyenne	mittel	media	Blanc globe à collet violet (S), Snowball (S)	5
	medium to long	moyenne à longue	mittel bis lang	media a larga		6
	long	longue	lang	larga	D'Auvergne hâtive (S), Jaune boule d'or (S)	7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga		8
	very long	très longue	sehr lang	muy larga		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13.		**QN MS/VG**	**(a), (b)**	**100-130**			
		Leaf: width of terminal lobe	**Feuille : largeur du lobe terminal**	**Blatt: Breite des Endlappens**	**Hoja: anchura del lóbulo terminal**		
		very narrow	très étroite	sehr schmal	muy estrecha		1
		very narrow to narrow	très étroite à étroite	sehr schmal bis schmal	muy estrecha a estrecha		2
		narrow	étroite	schmal	estrecha	Richelieu (S)	3
		narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media		4
		medium	moyenne	mittel	media	Blanc globe à collet violet (S), Jaune boule d'or (S)	5
		medium to broad	moyenne à large	mittel bis breit	media a ancha		6
		broad	large	breit	ancha	Long d'Alsace (S)	7
		broad to very broad	large à très large	breit bis sehr breit	ancha a muy ancha		8
		very broad	très large	sehr breit	muy ancha		9
14.		**QN VG**	**(a)**	**100-130**			
		Leaf: hairiness of upper side	**Feuille : pilosité de la face supérieure**	**Blatt: Behaarung der Oberseite**	**Hoja: vellosidad del haz**		
		absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Rondo (S), Appin (S)	1
		very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil		2
		weak	faible	gering	débil	Tokyo Market (S)	3
		weak to medium	faible à moyenne	gering bis mittel	débil a media		4
		medium	moyenne	mittel	media	De Milan à forcer à collet rose (S)	5
		medium to strong	moyenne à forte	mittel bis stark	media a fuerte		6
		strong	forte	stark	fuerte	Blanc dur d'hiver (S), Rouge plat hâtif à feuille entière (S)	7
		strong to very strong	forte à très forte	stark bis sehr stark	fuerte a muy fuerte		8
		very strong	très forte	sehr stark	muy fuerte		9
15.	**(*)**	**QN VG**	**(+)**	**240-260**			
		Root: degree of swelling	**Racine : degré de renflement**	**Rübe: Grad der Schwellung**	**Raíz: grado de engrosamiento**		
		absent or weak	absent ou faible	fehlend oder gering	ausente o débil	Grelos de Santiago (A), Simax (A)	1
		medium	moyen	mittel	medio	Globo blanco de Lugo (S)	2
		strong	fort	stark	fuerte	Polybra (S), Tokyo Market (S)	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16.	**(*)**	**PQ VG**		**240-260**			
		Only varieties with Root: degree of swelling: medium or strong: Root: color of skin above soil	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : couleur de l'épiderme de la partie hors du sol**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Farbe der Haut oberhalb des Bodens**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: color de la epidermis por encima de la tierra**		
		white	blanc	weiß	blanco	Tokyo Cross (S)	1
		green	vert	grün	verde	Rondo (S)	2
		yellow-orange	orangé jaune	gelborange	amarillo-naranja	Jaune boule d'or (S)	3
		red	rouge	rot	rojo	Scarlet Queen Red Stem (S)	4
		reddish purple	pourpre rougeâtre	rötlichpurpurn	púrpura rojizo	Falko (S)	5
		bluish purple	pourpre bleuâtre	bläulichpurpurn	púrpura azulado	Blanc globe à collet violet (S)	6
		black	noir	schwarz	negro	Noir long (S)	7
17.		**QN VG**		**240-260**			
		Only varieties with Root: degree of swelling: medium or strong: Root: intensity of color of skin above soil	**Uniquement variétés avec racine : degré de renflement : moyen ou fort: Racine : intensité de la couleur de l'épiderme de la partie hors du sol**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Intensität der Farbe der Haut oberhalb des Bodens**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: intensidad del color de la epidermis por encima de la tierra**		
		light	claire	hell	clara	Blanc globe à collet violet (S), Massif (S)	1
		medium	moyenne	mittel	media	Declic (S), Jaune boule d'or (S)	2
		dark	foncée	dunkel	oscura	Clovis (S), Hector (S)	3
18.	**(*)**	**PQ VG**		**240-260**			
		Only varieties with Root: degree of swelling: medium or strong: Root: color of skin below soil	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : couleur de l'épiderme de la partie enterrée**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Farbe der Haut unterhalb des Bodens**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: color de la epidermis bajo tierra**		
		white	blanc	weiß	blanco	Milan White Forcing (S), Natsu Komachi (S), Taronda (S)	1
		yellow	jaune	gelb	amarillo	Goldana (S), Jaune boule d'or (S)	2
		red	rouge	rot	rojo	Scarlet Queen Red Stem (S)	3
		purple	pourpre	purpurn	púrpura		4
		black	noir	schwarz	negro	Noir long (S)	5

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
19.	**(*)** **QL** **VG**			**240-280**			
		Only varieties with Root: degree of swelling: medium or strong: Root: color of flesh	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : couleur de la chair**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Farbe des Fleisches**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: color de la pulpa**		
		white	blanc	weiß	blanco	Noir long (S), Scarlet Queen Red Stem (S), Taronda (S)	1
		yellow	jaune	gelb	amarillo	Jaune boule d'or (S), Goldana (S)	2
20.		**QL** **VG**		**240-280**			
		Only varieties with Root: degree of swelling: medium or strong: Root: anthocyanin coloration of flesh	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : pigmentation anthocyanique de la chair**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Anthocyanfärbung des Fleisches**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: pigmentación antociánica de la pulpa**		
		absent	absente	fehlend	ausente	Marteau (S)	1
		present	présente	vorhanden	presente	Scarlet Queen Red Stem (S)	9
21.	**(*)** **QN** **VG**		**(+)**	**260-290**			
		Only varieties with Root: degree of swelling: medium or strong: Root: position in soil	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : position dans le sol**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Sitz im Boden**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: posición en el suelo**		
		very shallow	très peu profonde	sehr flach	muy superficial	Declic (S), Milan White Forcing (S)	1
		very shallow to shallow	très peu profonde à peu profonde	sehr flach bis flach	muy superficial a superficial		2
		shallow	peu profonde	flach	superficial	Oasis (S)	3
		shallow to medium	peu profonde à moyenne	flach bis mittel	superficial a media		4
		medium	moyenne	mittel	media	Agressa (S)	5
		medium to deep	moyenne à profonde	mittel bis tief	media a profunda		6
		deep	profonde	tief	profunda	Jaune boule d'or (S), Noir long (S)	7
		deep to very deep	profonde à très profonde	tief bis sehr tief	profunda a muy profunda		8
		very deep	très profonde	sehr tief	muy profunda	Teltower Kleine (S)	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
22.	**(*)**	**PQ VG**	**(+)**	**260-280**			
		Only varieties with Root: degree of swelling: medium or strong: Root: shape in longitudinal section	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : forme en section longitudinale**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Form im Längsschnitt**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: forma en sección longitudinal**		
		narrow oblate	arrondie-aplatie étroite	schmal breitrund	achatada estrecha	Platte Witte Mei (S)	1
		oblate	arrondie-aplatie	breitrund	achatada	Milan White (S)	2
		circular	circulaire	kreisrund	circular	Rondo (S)	3
		ovate	ovale	eiförmig	oval	Marteau (S)	4
		oblong	oblongue	rechteckig	oblonga	Delilah (S)	5
		narrow oblong	oblongue étroite	schmal rechteckig	oblonga estrecha	Long d'Alsace (S)	6
		obovate	obovale	verkehrt eiförmig	oboval		7
		broad obovate	obovale large	breit verkehrt eiförmig	oboval ancha	Aberdeen Green Top Yellow (S)	8
		triangular	triangulaire	dreieckig	triangular	De Montesson (S)	9
23.	**(*)**	**QN MS/VG**		**260-280**			
		Only varieties with Root: degree of swelling: medium or strong: Root: length	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : longueur**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Länge**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: longitud**		
		very short	très courte à courte	sehr kurz	muy corta	Milan White (S)	1
		very short to short	courte	sehr kurz bis kurz	muy corta a corta		2
		short	courte à moyenne	kurz	corta	Clovis (S), Declic (S)	3
		short to medium	moyenne	kurz bis mittel	corta a media		4
		medium	moyenne à longue	mittel	media	Dynamo (S)	5
		medium to long	longue	mittel bis lang	media a larga		6
		long	longue à très longue	lang	larga	Taronda (S)	7
		long to very long	très longue	lang bis sehr lang	larga a muy larga		8
		very long	très courte à courte	sehr lang	muy larga	Kranjska Podolgovata (S)	9
24.		**QL VG**	**(+)**	**260-280**			
		Only varieties with Root: degree of swelling: medium or strong: Root: curvature of vertical axis	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : courbure de l'axe vertical**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Biegung der vertikalen Achse**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: curvatura del eje vertical**		
		absent	absente	fehlend	ausente	Taronda (S)	1
		present	présente	vorhanden	presente	De Croissy (S)	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
25. (*)	**QN VG**		**260-280**			
	Only varieties with Root: degree of swelling: medium or strong: Root: position of broadest part	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : position de la partie la plus large**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Position des breitesten Teils**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: posición de la parte más ancha**		
	above middle	au-dessus du milieu	oberhalb der Mitte	en la mitad superior	Marteau (S)	1
	at middle	au milieu	in der Mitte	en el medio	Jaune boule d'or (S)	2
	below middle	en dessous du milieu	unterhalb der Mitte	en la mitad inferior	Blanc dur d'hiver (S)	3
26. (*)	**QN MS/VG**		**260-280**			
	Only varieties with Root: degree of swelling: medium or strong: Root: diameter at broadest part	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : diamètre de la partie la plus large**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Durchmesser am breitesten Teil**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: diámetro en la parte más ancha**		
	very small	très petit	sehr klein	muy pequeño		1
	very small to small	très petit à petit	sehr klein bis klein	muy pequeño a pequeño		2
	small	petit	klein	pequeño	Hakutaka (S)	3
	small to medium	petit à moyen	klein bis mittel	pequeño a medio		4
	medium	moyen	mittel	medio	Rondo (S)	5
	medium to large	moyen à grand	mittel bis groß	medio a grande		6
	large	grand	groß	grande	Massif (S)	7
	large to very large	grand à très grand	groß bis sehr groß	grande a muy grande		8
	very large	très grand	sehr groß	muy grande		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27.	**(*)** **QN** **VG**		**(+)** **(c)**	**260-280**			
		Only varieties with Root: degree of swelling: medium or strong: Root: shape of collar	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : forme du collet**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Form des Kragens**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: forma del cuello**		
		strongly depressed	fortement déprimée	stark eingesenkt	muy deprimida	De Milan à forcer à collet rose (S)	1
		strongly depressed to moderately depressed	fortement déprimée ou modérément déprimée	stark eingesenkt bis mäßig eingesenkt	muy deprimida a medianamente deprimida		2
		moderately depressed	modérément déprimée	mäßig eingesenkt	medianamente deprimida	Milan White Forcing (S)	3
		moderately depressed to flat	modérément déprimée à plate	mäßig eingesenkt bis flach	medianamente deprimida a plana		4
		flat	plate	flach	plana	Milan White (S)	5
		flat to moderately raised	plate à modérément protubérante	flach bis mäßig vorgewölbt	plana a medianamente prominente		6
		moderately raised	modérément protubérante	mäßig vorgewölbt	medianamente prominente	Taronda (S)	7
		moderately raised to strongly raised	modérément protubérante à fortement protubérante	mäßig vorgewölbt bis stark vorgewölbt	medianamente prominente a muy prominente		8
		strongly raised	fortement protubérante	stark vorgewölbt	muy prominente	Agressa (S)	9
28.	**(*)** **PQ** **VG**		**(+)** **(c)**	**260-280**			
		Only varieties with Root: degree of swelling: medium or strong: Root: shape of apex	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Racine : forme de l'apex**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Rübe: Form des Apex**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Raíz: forma del ápice**		
		narrow acute	aigue étroite	schmal spitz	aguda estrecha	Noir long (S)	1
		broad acute	aigue large	breit spitz	aguda ancha	Kranjska Podolgovata (S)	2
		rounded	arrondie	abgerundet	redondeada	Civasto R (S)	3
		truncate	tronquée	gerade	truncada	Milan White (S)	4
		depressed	déprimée	eingesenkt	deprimida	Milan White Forcing (S)	5

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
29.	**QN MG/VG**		**260**			
	Only varieties with Root: degree of swelling: medium or strong: Time of harvest maturity	**Uniquement variétés avec racine : degré de renflement : moyen ou fort : Époque de maturité de récolte**	**Nur Sorten mit Rübe: Grad der Schwellung: mittel oder stark: Zeitpunkt der Erntereife**	**Solo variedades con Raíz: grado de engrosamiento: medio o fuerte: Época de madurez para la cosecha**		
	very early	très précoce	sehr früh	muy temprana		1
	very early to early	très précoce à précoce	sehr früh bis früh	muy temprana a temprana		2
	early	précoce	früh	temprana	Oasis (S)	3
	early to medium	précoce à moyenne	früh bis mittel	temprana a media		4
	medium	moyenne	mittel	media	Civasto R (S)	5
	medium to late	moyenne à tardive	mittel bis spät	media a tardía		6
	late	tardive	spät	tardía	Aberdeen Green Top Yellow (S)	7
	late to very late	tardive à très tardive	spät bis sehr spät	tardía a muy tardía		8
	very late	très tardive	sehr spät	muy tardía		9
30.	**QN VG**	**(+)**	**310**			
	Plant: number of sprouts	**Plante : nombre de pousses**	**Blüte: Anzahl Sprossen**	**Planta: número de brotes**		
	very few	très petit	sehr wenige	muy bajo	Taronda (S)	1
	very few to few	très petit à petit	sehr wenige bis wenige	muy bajo a bajo		2
	few	petit	wenige	bajo	Largo de Alsacia (S)	3
	few to medium	petit à moyen	wenige bis mittel	bajo a medio		4
	medium	moyen	mittel	medio	São Cosme (S)	5
	medium to many	moyen à grand	mittel bis viele	medio a alto		6
	many	grand	viele	alto	Globo blanco de Lugo (S)	7
	many to very many	grand à très grand	viele bis sehr viele	alto a muy alto		8
	very many	très grand	sehr viele	muy alto	Grelos de Santiago (A)	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
31.	**QN MG/VG**		**370**			
	Time of flowering	**Époque de floraison**	**Zeitpunkt der Blüte**	**Época de floración**		
	very early	très précoce	sehr früh	muy temprana	Greleiro Temporão (A)	1
	very early to early	très précoce à précoce	sehr früh bis früh	muy temprana a temprana		2
	early	précoce	früh	temprana	Grelos de Santiago (A), Tyfon (S)	3
	early to medium	précoce à moyenne	früh bis mittel	temprana a media		4
	medium	moyenne	mittel	media	Globo blanco de Lugo (S), Marteau (S)	5
	medium to late	moyenne à tardive	mittel bis spät	media a tardía		6
	late	tardive	spät	tardía	Bola de nieve (S), Jaune boule d'or (S)	7
	late to very late	tardive à très tardive	spät bis sehr spät	tardía a muy tardía		8
	very late	très tardive	sehr spät	muy tardía	Platte Witte Mei (S)	9
32.	**QN VG**		**370-400**			
	Petal: intensity of yellow color	**Pétale : intensité de la couleur jaune**	**Blütenblatt: Intensität der Gelbfärbung**	**Pétalo: intensidad del color amarillo**		
	light	claire	hell	claro	Taronda (S)	1
	medium	moyenne	mittel	medio		2
	dark	foncée	dunkel	oscuro	Jaune boule d'or (S)	3

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Observations should be made on the largest fully developed leaf.

(b) Parts of the leaf blade are considered to be lobed if:

1. They have a minimum length of 1 cm and
2. When folded back to the midrib as shown in Figs 1 and 2, the folded tissue meets the midrib

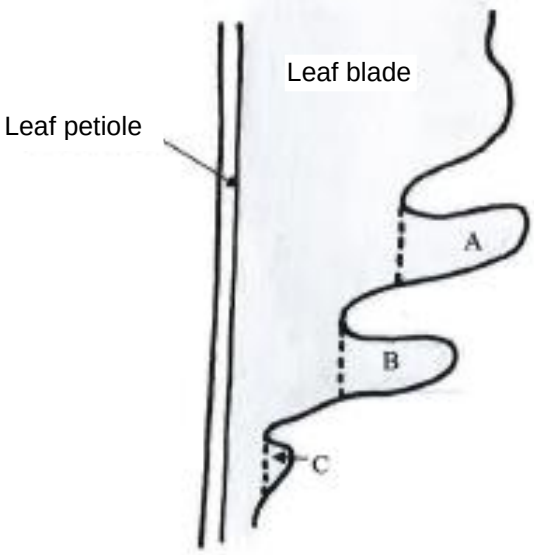


Figure 1

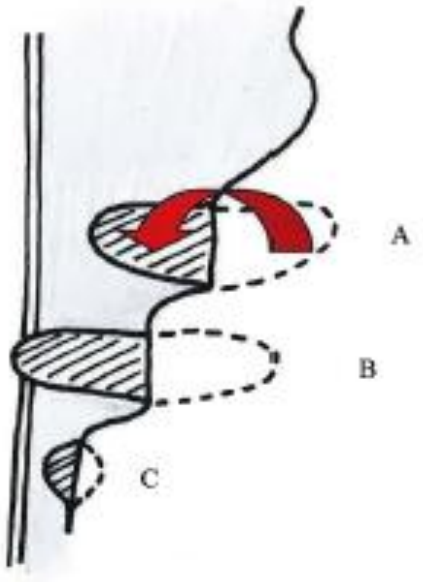
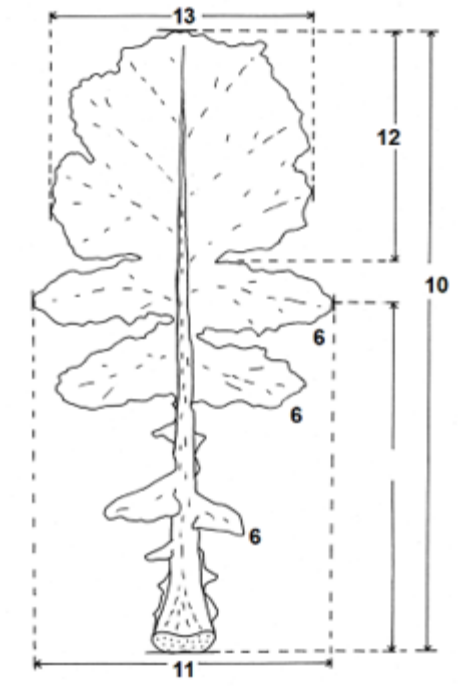


Figure 2

A is not a lobe as it does not meet the midrib when folded
B is a lobe as it meets the midrib when folded
C is too small to be a lobe as it is less than 1 cm in length and does not meet the midrib when folded



6. Leaf: number of lobes
10. Leaf: length
11. Leaf: width
12. Leaf: length of terminal lobe
13. Leaf: width of terminal lobe

(c)

a = Collar
b = Apex

8.2 Explanations for individual characteristics

Ad. 1: Ploidy

The ploidy status of the plant can be checked by different methods:

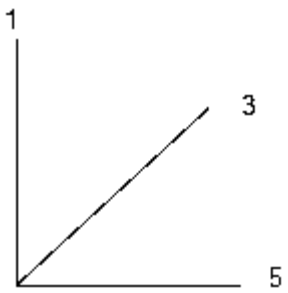
- determination of the number of chromosomes of the non-thickened root meristem (which is the most reliable method),
- examination of the stomata on the lower side of the cotyledon (tetraploid varieties have more and longer stomata than diploid varieties),
- examination of the chloroplasts of the guard cells on the lower side of the cotyledon (the guard cells of tetraploid varieties are bigger and contain more chloroplasts (> 20) than those of diploid varieties (> 10).
- Flow cytometry (DNA quantification method).

Observations should be made on 20 plants/seeds.

Ad. 2: Petiole: intensity of anthocyanin coloration

Observations should be made on the basal part of the lower side of the leaf.

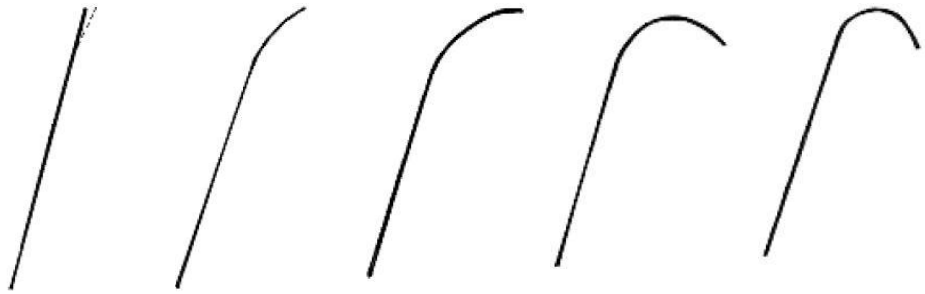
Ad. 3: Leaf: attitude



1 = erect
3 = semi-erect
5 = prostrate

Ad. 4: Leaf: degree of recurving of the apex

The black line represents the profile of the whole leaf.



1	3	5	7	9
absent or very weak	weak	medium	strong	very strong

Ad. 7: Only varieties with Leaf: number of lobes: absent or very few: Leaf: depth of the incisions of margin at basal part

1 absent or very shallow | 3 shallow | 5 medium | 7 deep | 9 very deep

Ad. 8: Leaf: undulation of margin

1 absent or very weak | 3 weak | 5 medium | 7 strong | 9 very strong

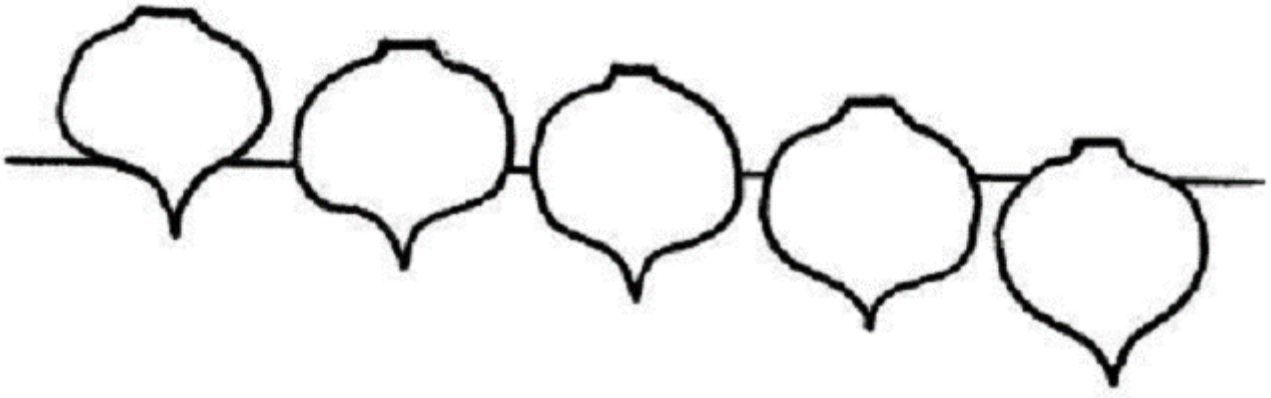
Ad. 9: Leaf: dentation of margin of upper part of the leaf

1 absent or very weak | 3 weak | 5 medium | 7 strong | 9 very strong

Ad. 15: Root: degree of swelling

To define the degree of swelling, the weight ratio (weight of leaves / weight of root) can be used.
Weight ratio <2: strong swelling
2 ≤ Weight ratio ≤10: medium swelling
Weight ratio >10: absent or weak swelling

Ad. 21: Only varieties with Root: degree of swelling: medium or strong: Root: position in soil



1	3	5	7	9
very shallow	shallow	medium	deep	very deep

Ad. 22: Only varieties with Root: degree of swelling: medium or strong: Root: shape in longitudinal section

	← broadest part →		
below middle	at middle	above middle	

broad (*low*) ← width (ratio length/width) → narrow (*high*)

	 6 narrow oblong			
	 5 oblong			
 4 ovate	 3 circular	 7 obovate	 8 broad obovate	 9 triangular
	 2 oblate			
	 1 narrow oblate			

Ad. 24: Only varieties with Root: degree of swelling: medium or strong: Root: curvature of vertical axis

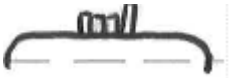
1
absent

9
present

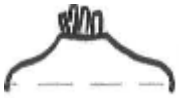
Ad. 27: Only varieties with Root: degree of swelling: medium or strong: Root: shape of collar

1
strongly depressed

3
moderately depressed



5
flat



7
moderately raised

9
strongly raised

Ad. 28: Only varieties with Root: degree of swelling: medium or strong: Root: shape of apex

1
narrow acute

2
broad acute

3
rounded

4
truncate

5
depressed

Ad. 30: Plant: number of sprouts

1
very few

9
very many

8.3 Key to Growth Stages

00	Dry seed
1-10	Germination and emergence through soil
	Seedling growth
12	Elongation of emerging shoot
15	Elongation and opening of cotyledons
20	Cotyledons fully opened
30	Cotyledons fully opened and full development of first true leaf
40	Second leaf fully developed
50	Third leaf fully developed and initial senescence of cotyledons
60	Fourth leaf fully developed and partial senescence of cotyledons
70	Fifth leaf fully developed and advanced senescence/drop of cotyledons
	Leaf development
80	Sixth leaf fully developed
90	Seventh leaf fully developed; initial senescence of first true leaf in early cultivars
100	Eighth leaf fully developed; 30 % senescence of first true leaf
110	Ninth leaf fully developed; 60% senescence of first true leaf
120	Tenth leaf fully developed; complete senescence and drop of first true leaf
130	Eleventh leaf fully developed.
	Root development
200	Slight swelling of the root at ground level
220	Development of a small swollen root above ground level
240	Swollen root increasing in size but not fully developed
260	Root fully developed with no cork on skin
270	Root fully developed with 40% cork development on skin
280	Root fully developed with 80 - 100% cork development
290	Root flesh becoming pithy and fibrous
300	Root flesh pithy and fibrous
	Flowering and seed production on main stem
310	Initial formation and elongation of the flowering stem
330	Elongation of the flowering stem with clear space between leaves
350	First bud formation and further elongation of stem
360	Terminal inflorescence in bud
370	Terminal inflorescence with first open flower
380	Terminal inflorescence partially flowering
400	Terminal inflorescence fully flowering
420	Development of siliqua with elongation of flowering stem
430	Lowest fully developed siliqua green
450	Lowest fully developed siliqua senescing and going brown
475	Lowest fully developed siliqua dry with seed beginning to dry
500	Lowest fully developed siliqua dry with mature dry seed

9. Literature

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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	Botanical name	*Brassica rapa* L. var. *rapa*
1.2	Common name	Turnip

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 [ ]

(b) partially known cross [ ]

(c) unknown cross [ ]

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

4.2.1 Seed-propagated varieties

(a) Cross-pollination [ ]
(b) Hybrid [ ]
(c) 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 (1)	**Ploidy**		
	diploid	Milan White (S)	2 [ ]
	tetraploid	Taronda (S)	4 [ ]
5.2 (2)	**Petiole: intensity of anthocyanin coloration**		
	absent or very weak	Delilah (S), Long d'Alsace (S)	1 [ ]
	weak	Kranjska Podolgovata (S), Simax (A)	2 [ ]
	medium	Samson (S)	3 [ ]
	strong		4 [ ]
	very strong	Scarlet Queen Red Stem (S)	5 [ ]
5.3 (6)	**Leaf: number of lobes**		
	absent or very few	Declic (S), Polybra (S), Simax (A)	1 [ ]
	very few to few		2 [ ]
	few	Tokyo Cross (S)	3 [ ]
	few to medium		4 [ ]
	medium	Blanc globe à collet violet (S), Richelieu (S)	5 [ ]
	medium to many		6 [ ]
	many	Civasto R (S)	7 [ ]
	many to very many		8 [ ]
	very many		9 [ ]
5.4 (15)	**Root: degree of swelling**		
	absent or weak	Grelos de Santiago (A), Simax (A)	1 [ ]
	medium	Globo blanco de Lugo (S)	2 [ ]
	strong	Polybra (S), Tokyo Market (S)	3 [ ]

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

	Characteristics	Example Varieties	Note
5.5 (16)	**Only varieties with Root: degree of swelling: medium or strong: Root: color of skin above soil**		
	white	Tokyo Cross (S)	1 [ ]
	green	Rondo (S)	2 [ ]
	yellow-orange	Jaune boule d'or (S)	3 [ ]
	red	Scarlet Queen Red Stem (S)	4 [ ]
	reddish purple	Falko (S)	5 [ ]
	bluish purple	Blanc globe à collet violet (S)	6 [ ]
	black	Noir long (S)	7 [ ]
5.6 (18)	**Only varieties with Root: degree of swelling: medium or strong: Root: color of skin below soil**		
	white	Milan White Forcing (S), Natsu Komachi (S), Taronda (S)	1 [ ]
	yellow	Goldana (S), Jaune boule d'or (S)	2 [ ]
	red	Scarlet Queen Red Stem (S)	3 [ ]
	purple		4 [ ]
	black	Noir long (S)	5 [ ]
5.7 (19)	**Only varieties with Root: degree of swelling: medium or strong: Root: color of flesh**		
	white	Noir long (S), Scarlet Queen Red Stem (S), Taronda (S)	1 [ ]
	yellow	Goldana (S), Jaune boule d'or (S)	2 [ ]
5.8 (22)	**Only varieties with Root: degree of swelling: medium or strong: Root: shape in longitudinal section**		
	narrow oblate	Platte Witte Mei (S)	1 [ ]
	oblate	Milan White (S)	2 [ ]
	circular	Rondo (S)	3 [ ]
	ovate	Marteau (S)	4 [ ]
	oblong	Delilah (S)	5 [ ]
	narrow oblong	Long d'Alsace (S)	6 [ ]
	obovate		7 [ ]
	broad obovate	Aberdeen Green Top Yellow (S)	8 [ ]
	triangular	De Montesson (S)	9 [ ]

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

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	*Leaf: type*	*entire*	*lobed*

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

Main use:
- Root vegetable [ ]
- Leaf and stem consumption [ ]
- Stubble or Forage Turnip [ ]

Time of sowing:
- Spring sown [ ]
- Summer sown [ ]
- Autumn sown [ ]

Authorities may allow certain of this information to be provided in a confidential section of 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 (b) is yes, please attach a copy of the authorization.

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]