

UPOV

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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
 GENEVA

DRAFT

Raphanus sativus L.

UPOV Code: RAPHA_SAT

(*Raphanus sativus* L. var. *sativus*; *Raphanus sativus* L. var. *niger* (Mill.) S. Kerner;
Raphanus sativus L. var. *longipinnatus* L.H. Bailey)

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Germany

to be considered by

the Technical Working Party for Vegetables

at its forty-fourth session, to be held in Veliko Tarnovo, Bulgaria, from July 5 to 9, 2010

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Raphanus sativus</i> L. var. <i>sativus</i>	Radish, Garden radish, European radish, Chinese Small radish, Western radish	Radis de tous les mois	Radieschen	Rabanito
<i>Raphanus sativus</i> L. var. <i>niger</i> (Mill.) S. Kerner, <i>Raphanus sativus</i> L. var. <i>longipinnatus</i> L.H. Bailey	Black radish, Daikon radish, Oriental radish	Radis d'été, d'automne et d'hiver	Rettich	Rabano de invierno, Rabano negro

* 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.]

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.

NL10: Looking at document TG/63/7 (proj.4)-TG/64/7 (proj.3) the conclusion is drawn that it is a very complicated and elaborate exercise to make one guideline out of two. This conclusion was already drawn after the ring test and also with regard to the working document of 2009. We refer to the annexes of this document with some of the comments by NL at that time.

NL is therefore proposing to reconsider the decision to construct one guideline.

The alternative, two guidelines, would need references in the preface “associated documents” to the other guideline which should be consulted in the few cases of doubt whether the variety belongs to one or the other group. Those groups should be clearly defined, with Latin botanical names as well common names. In the TQ’s there should be a provision for a declaration from the breeder to which type the candidate belongs.

Looking, with this proposal in mind, at the actual combined draft, the comments from NL are as follows:

Annex I

Comments NL on ringtest report Raphanus TWV 2008

- If we separate into groups in one guideline we should define those groups, or rather types, clearly in a scheme (like the Cucurbita pepo model) and keep where necessary those separate characteristics with not too wide scales, for those separate types. We think that a guideline preferably should not be used as a flora, to determine whether varieties belong to a certain group or type.
- If we separate in two guidelines, we then have to accept then that in the past some varieties were classified differently and that this should be corrected.

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Green highlighting: changes made by the Leading Expert

Yellow highlighting: comments made by interested experts

Grey highlighting: amendments in accordance with document TGP/7/2

1. Subject of these Test Guidelines

1.1 These Test Guidelines apply to all varieties of *Raphanus sativus* L. var *sativus*; *Raphanus sativus* L. var. *niger* (Mill.) S. Kerner and *Raphanus sativus* L. var. *longipinnatus* L.H. Bailey and their hybrids.

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:

14, 000 ~~40,000~~ seeds.

DE10 proposes to request the same amount in both groups

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority.

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.

~~3.3.2 Type of observation~~

The recommended method of observing the characteristic is indicated by the following key in the second column of the Table of Characteristics:

~~MG: single measurement of a group of plants or parts of plants~~

~~MS: measurement of a number of individual plants or parts of plants~~

~~VG: visual assessment by a single observation of a group of plants or parts of plants~~

~~VS: visual assessment by observation of individual plants or parts of plants.~~

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 60 plants for varieties of the D- Group and ~~400~~ 200 plants for varieties of the S-Group which should be divided between at least two ~~or more~~ replicates.

DE comment: In the first draft of 2007, 400 plants were given (in contrast to TG 64/7=, no comment has been found in the report. HU 2009 proposed to have 200 plants.

3.4.2 To establish if a variety is to be considered belonging to the S-Group or D-Group, the explanation in Chapter 8.1 should be considered.

NL10: to assess whether a variety is a S or a D, one can conclude that in fact always an extra "pre-test" is required, which is not desirable. (see also 8.1)

3.4.3 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 / Parts of Plants to be Examined

Unless otherwise indicated, all observations ~~on single plants~~ for the purpose of distinctness should be made on 40 plants, or parts taken from each of 40 plants ~~and any other observations made on all plants in the test~~ disregarding of 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:

All: to check whether a population standard (like for shape and color) or relative uniformity tolerances (see General Introduction) should be applied for all characteristics:

NL10: We agree with the proposal.

4.2.2 For the assessment of uniformity ~~should be according to the recommendations for cross-pollinated varieties in the General Introduction. For the characteristics, Radish: shape (characteristic 17) and Radish: color of skin (characteristic 21),~~ a population standard of 2% and an acceptance probability of 95% should be applied. In the case of a sample size of 60 plants, 3 off-types are allowed. In the case of a sample size of ~~400~~ 200 plants, ~~13~~ 7 off-types are allowed.

4.2.2 Hybrids and inbred lines

~~For the assessment of uniformity of hybrids and inbred lines, a population standard of 2% and an acceptance probability of at least 95% should be applied. In the case of 60 plants, 3 off-types are allowed. In the case of a sample size of 400 plants, 13 off-types are allowed.~~

4.3 Stability

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

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

DE10: grouping characteristics have to be discussed:

- (a) Ploidy (characteristic 1)
- (b) Leaf: length (characteristic 7)
- (c) Leaf blade: lobes (characteristic 12)
- (d) Radish: length (characteristics 17)
- (e) Radish: diameter (characteristic 18)
- (f) Radish: shape (characteristic 19)
- (g) Radish: number of colors of skin (characteristic 23)
- (h) Only varieties with Radish: Number of colors of skin: one: Radish: color of skin (characteristic 24)
- (i) Only varieties with Radish: Number of colors of skin: two: radish: extent of white tip (characteristic 27)
- (j) Time to harvest maturity (characteristic 32)

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*

6.4.1. 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~~ ~~3.3.2~~

C: special test

(1) Type of example variety belongs to:

(S) = S- Group

(D) = D- Group

(a), (b) 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

NL10: We note that many of the QN characteristics are not suitable for the combination of both types in one range of states of expression and should be split up:

- Char 3
- Char 7
- Char 8
- Char 13
- Char 17
- Char 18
- Char 32
- Char 33

The alternative for splitting up would be that both types are in the same characteristic, but then the example varieties should be replaced: this will result in the small types in the “small” states and the large in the “large” states of expression. The effect would be that those characteristics will become less effective with regard to distinctness within the type.

	English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
1.	MG Ploidy	Ploïdie	Ploidie	Ploidía		
	C					
	A.					
	(*)					
	(+)					
QL	diploid	Diploïde	diploid	diploide	Arista (S), Halblanger weißer Sommer (D)	2
	tetraploid	Tétraploïde	tetraploid	tetraploide	Rex (D)	4

DE10: Propose to have state (1) absent or very weak, (2) medium, (3) strong to deal with the environmental effect on anthocyanin coloration.

JP10: Misspelling of example variety: correct: Minowase Summer Cross No. 3

HU10: agree if example varieties for the states can be given, otherwise 1/9 will be enough

ISF10: proposes to include an intermediate note: mix, since there are 3-way cross varieties and if 3 way cross is present (present x absent) then it is segregated present 1:absent 1.

2.	VG Seedling:	Plantule:	Keimpflanze:	Plantula:		
	anthocyanin	pigmentation	Anthocyanfärbung	pigmentacion		
	coloration of	anthocyanique de	des Hypokotyls	antocianica del		
	hypocotyl	l'hypocotyle		hipocotilo		
QL	(a) absent	Absente	fehlend	ausente	Belcanto (S), Kocto (S), Minowase Summer Cross No. 3 (D)	1
PQ	present	Présente	vorhanden	presente	Cerise (S), Kaiser (D), Rex (D)	9

English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
3. VG Cotyledon: size	Cotyledon: taille	Keimblatt: Größe	Cotiledon: tamaño		
3					
QN (a) small	Petit	klein	pequeno	Cerise (S), Saxa 2 (S), Neptun (D)	3
medium	Moyen	mittel	medio	Korund (S), Rota (S), Servatius (D)	5
large	Grand	groß	grande	Apache (S), Mikura Cross (D)	7

DE10: We propose to delete.

HU10: agrees

4. VG <u>Only for S-Group</u> : Foliage: width of attachment	Feuillage: largeur de l'attache au collet	<u>Nur für S-Gruppe:</u> Laub: Breite des Ansatzes	Follaje: anchura de la inserción al cuello		
4.					
QN narrow	fine	schmal	estracha	Flamino (S)	3
medium	moyen	mittel	medio	Apache (S), Flambo (S),	5
wide	large	breit	ancha	Rond écarlate (S),	7
5. VG <u>Only for D-Group</u> : Foliage: number of fully developed leaves	Feuillage: nombre de feuille à complet développement	<u>Nur für D-Gruppe:</u> Laub: Anzahl der ausgewachsenen Blätter	Follaje: numero de hojas completamente desarrolladas		
4.					
QN (b) few	petit	gering	bajo	Rex (D), Ostergruß rosa 2 (D)	3
medium	moyen	mittel	medio	Neptun (D)	5
many	grand	groß	Alto	April Cross (D)	7

English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
JP10: propose to exchange an explanation concerning the time of observation (see b in Chapter 8.1) for instance: to be observed 30 days after sowing for D-group. Because observation of this Char. in harvest maturity time is influenced by "Position of soil"					
§6. 5./5 (*)	VG Leaf: attitude	Feuille: port	Blatt: Haltung	Hoja: porte	
QN (b)	erect	dressé	aufrecht	erecto	Clipo (S), Karissima (S), Rex (D) 1
	semi erect	demi-dressé	halbaufrecht	semierecto	Balkar (S), Ostergruß rosa 2 (D) 3
	horizontal	horizontal	waagrecht	horizontal	Bel Image (S), Ronde Witte (S), Mikura Cross (D), Minowase Summer Cross No. 3 (D) 5

ES09: propose to add an explanation concerning the time of observation for instance: to be observed 45 days after sowing for all varieties, Scale 3-7 and 90 days after sowing, Scale 3 to 9 only for varieties not pithy and not bolting at that time [not discussed 2009]

JP10: If Chapter 8.1 (b) is too little explanation, What if "Fully developed leaf" is added to the explanation of the Char.

ISF10: does not agree with the remark from Spain and wishes to leave it as it is defined now.

NL10: 45 days is much to late for small European radishes, the proposal for the observation will become very complicated.

7. 6./6.	MS Leaf: length	Feuille: longueur	Blatt: Länge	Hoja: longitud	
(*)	(b) short	courte	kurz	corta	Cerise (S), Saxa 2 (S), Runder weißer (D), Sutong (D) 3
(+)					
QN	medium	moyenne	mittel	media	Amored (S) Novo (S), Noir long maraîcher (D), Rex (D) 5
	long	longue	lang	larga	National 2 (S), Noir gros rond d'hiver (D) 7

English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota	
ES09: propose to add an explanation concerning the time of observation for instance: to be observed 45 days after sowing for all varieties, Scale 3-7 and 90 days after sowing, Scale 3 to 9 only for varieties not pithy and not bolting at that time [not discussed in 2009]						
JP10: If Chapter 8.1 (b) is too little explanation, What if "Fully developed leaf" is added to the explanation of the Char.						
ISF10: does not agree with the remark from Spain and wishes to leave it as it is defined now.						
NL10: 45 days is much to late for small European radishes, the proposal for the observation will become very complicated.						
8.	VG	Only for D-Group:	Limbe:	Nur für D-Gruppe:	Limbo:	
new		Leaf: width		Blattspreite: Breite		
7b.						
(+)	(b)	narrow		schmal		3
QN		medium		mittel	April Cross (D)	5
		broad		breit	Mantanghong (D), Rex (D)	7

All: to provide example varieties for D-Group (varities mention in other char. are preferred)

HU: pointed and rounded is enough. What kind of shape is the intermediate (drawing necessary)? Is there any example variety for intermediate shape?

9.	VG	Leaf blade: Shape of apex	Limbe: forme du sommet	Blattspreite: Form der Spitze	Limbo: forma del ápice		
8/-							
PQ	(b)	pointed	pointu	zugespitzt	puntiagudo	Korund (S), Paradiso (S), JP10:Matsumoto kiriba (D)	1
		intermediate	intermédiaire	mittel		JP10: Minowase Summer Cross No. 3 (D)	2
		rounded	arrondi	Abgerundet	redondeado	Neckarperle (S), Sora (S), JP10: Everest (D)	3

	English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
10.	VG Leaf blade: color	Limbe: couleur	Blattspreite: Farbe	Limbo: color		
9./8.						
PQ	(b) green	vert	grün	verde	Saxa 2 (S), IpoX (S) Minowase Summer Cross No. 3 (D)	1
	yellowish green	jaunâtre	gelblich grün	amarillento	Scarlet Globe (S), Fiorent (S), Rex (D)	2
	greyish green	grisâtre	gräulich grün	grisáceo	Flair (S), Polka (S), Testo (S), Unicorn (D)	3

TWV 09: to delete all example varieties.

DE10: We propose to leave the example varieties, which are in general very useful for colours, which can't be defined by photos.

HU: propose to delete this character because char10 and 11 is almost same. It is very difficult to make differences in the intensity e.g. at yellowish and greyish green. Or we can keep 11 (modified: intensity of green color) and delete the 10.(see example varieties Scarlett Globe, Saxa 2, Polka)

	English	Limbe: intensité de la couleur	Blattspreite: Intensität der Färbung	Limbo: intensidad del color		
11.	VG Leaf blade: intensity of color	Limbe: intensité de la couleur	Blattspreite: Intensität der Färbung	Limbo: intensidad del color		
10./9.						
QN	(b) light	claire	hell	claro	Scarlett Globe (S), Flamino (S), Gaudio (S), Mikura Cross (D)	3
	medium	moyenne	mittel	medio	Saxa 2 (S), Furabella (S), Helo (S), Mino early (D), Omny (D)	5
	dark	foncée	dunkel	oscuro	Polka (S), Bamba (S), Clipo (S), Houseking (D)	7

DE10: (Division to the midrib) should be mentioned in the explanation

	English	Limbe: lobes (division atteignant la nervure principale)	Blattspreite: Lappung (Teilung bis zur Mittelrippe)	Limbo: lobulos (division hasta al nervio principal)		
12.	VG Leaf blade: lobes (division to midrib)	Limbe: lobes (division atteignant la nervure principale)	Blattspreite: Lappung (Teilung bis zur Mittelrippe)	Limbo: lobulos (division hasta al nervio principal)		
/10.						
	(*)					
	(+)					
QL	(b) absent	absents	fehlend	ausente	Viola (S), Rex (D), Servatius (D)	1
	present	présents	vorhanden	presente	Cherry Belle (S), Halblanger weißer Sommer (D)	9

	English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota	
13.	VG	Only varieties with	Limbe: nombre	Nur für Sorten mit	: Limbo: numero		
11./11		Leaf blade: lobes:	de lobes	Blattspreite:	de lobulos		
(*)		present: Varieties		Lappung:			
		with lobes divided		vorhanden:			
		to midrib only: Leaf		Blattspreite: Anzahl			
		blade: number of		Lappen			
		lobes (as for 12)					
QN	(b)	very few	très petit	sehr gering	muy bajo	Saxa 2 (S), Ostergruß rosa 2 (D)	1
		few	petit	gering	bajo	Ilka (S), Nelson (S), Halblanger weißer Sommer (D), JP10: Minowase Summer Cross No. 3 (D)	3
		medium	moyen	mittel	medio	Cracou (S), De cinq semaines rose (D)	5
		many	grand	groß	alto	Cherry Belle (S), Minowase Summer Cross No. 3 (D), Noir long maraîcher (D), JP10: Suikomi ninengo (D)	7
		very many	très grand	sehr groß	muy alto	Mikura Cross (D)	9
14.	VG	Leaf blade: depth of	Limbe: profondeur	Blattspreite: Tiefe	Limbo: profundidad		
13./13		incisions of margin	des découpures du	der Randeinschnitte	de las incisiones del		
.			bord		borde		
QN	(b)	absent or very shallow		fehlend oder sehr flach		Fury (S),	1
D or		shallow	peu profondes	flach	poco profundas	Apolo (S), Blanche transparente (S), Neptun (D)	3
S		medium	moyennes	mittel	medias	Cracou (S), April Cross (D)	5
		deep	profondes	tief	profundas	Flamino (S), Saxa 2 (S) Falco (D), Hilds blauer Herbst und Winter (D)	7

	English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota	
15.	VG	<u>Only for D-Group:</u> Petiole: anthocyanin coloration		<u>Nur für D-Gruppe:</u> Blattstiel: Anthocyanfärbung			
QL	(b)	absent	absente	fehlend	ausente	April Cross (D), Noir gros rond d'hiver (D), Omny (D)	1
		present	présente	vorhanden	present	Rose d'hiver de Chine (D), Violet de Gournay (D), Rex (D)	9
16.	VG	<u>Only for S-Group:</u> Petiole: Intensity of anthocyanin coloration		<u>Nur für S-Gruppe:</u> Blattstiel: Intensität der Anthocyanfärbung			
15+ 16. /14.	QN	(b)	absent or very weak	fehlend oder sehr schwach	Fakir (S)	1	
			weak	schwach	Flamino (S), Mirabeau (S), Blanche transparente (S)	3	
			medium	mittel	Erfurter Riesenrot (S), Forro (S)	5	
			strong	stark	Pernot (S)	7	
			very strong	sehr stark		9	

English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
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ES09: For length, width, ratio length/width and shape, the time of observation should be just before of become pithy. In the case of not become pithy at all, the time of 180 days after sowing should be used. [not discussed in 2009]

TWV 09: JP : Example varieties for D-Group to be provided (varieties mentioned in other char. are preferred)

All: example varieties for S-Group to be provided (varieties mentioned in other char. are preferred)

ISF10: finds the comments of Spain not very clear and wonders if they only apply to the D group. Spain is of the opinion that the time of observation should be just before the radish becomes pithy. However, you can only see this when you cut the radish, so it is necessary to keep cutting the radishes on a regular basis. Otherwise, there is a risk that you are too late and since it is a * characteristic the examination will require an extra year of testing

NL10: With regard to the remarks on characteristics 17, 18 and 19 when to observe: in case of a suitable sowing of certain types in order to avoid bolting (after the longest day), 180 days after sowing is a too long period. Varieties other than the small European radish will mostly have a harvest maturity from 40 to 100 days.

17. MS/ Radish: length VG	Racine: longueur	Rübe: Länge	Raiz: longitud		
15. (*)					
QN (b) very short	très courte	sehr kurz	muy corta	runder weißer (D- round type) JP10: Noir gros rond d'hiver (D)	1
short	courte	kurz	corta	Noir gros rond d'hiver (D—round type) JP10: Rex (D)	3
medium	moyenne	mittel	media	Gentoku (D), Neptun (D), JP10: Minowase Summer Cross No. 3	5
long	longue	lang	larga	Ninja (D), Servatius (D) JP10: Suikomi ninengo (D)	7
very long	très longue	sehr lang	muy larga	April Cross (D), Martina (D) JP10: Surato (D)	9

English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
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ES09: For length, width, ratio length/width and shape, the time of observation should be just before of become pithy. In the case of not become pithy at all, the time of 180 days after sowing should be used. Only one scale examples / examples to be revised [not discussed in 2009]

DE10: Example varieties are now in accordance with CPVO TP Char. 17, Radish: thickness.

JP: Propose to add state (1) very small and (9) very laege to keep balance between the radish length. And we propose the following example varieties for D-Group.

ISF10: finds the comments of Spain not very clear and wonders if they only apply to the D group. Spain is of the opinion that the time of observation should be just before the radish becomes pithy. However, you can only see this when you cut the radish, so it is necessary to keep cutting the radishes on a regular basis. Otherwise, there is a risk that you are too late and since it is a * characteristic the examination will require an extra year of testing

NL10: With regard to the remarks on characteristics 17, 18 and 19 when to observe: in case of a suitable sowing of certain types in order to avoid bolting (after the longest day), 180 days after sowing is a too long period. Varieties other than the small European radish will mostly have a harvest maturity from 40 to 100 days.

18. 18./16 .	MS/ Radish: diameter VG	Racine:	Rübe: Durchmesser	Raiz:		
QN	(b) very small				JP10: Ostergruß rosa 2 (D)	1
	small	petit	klein	pequeno	Gaudry 2 (S), JP10: Ostergruß rosa 2 (D), Noir gros round d'hiver (D)	3
	medium	moyenne	mittel	media	JP10: Rex (D), Minowase Summer Cross No. 3 (D)	5
	large	grand	groß	grande	Rond rose à très grand bout blanc (S), JP10: Noir gros round d'hiver (D), Koshin (D)	7
	very large				JP10: Sakurajima oomaru (D)	9

English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
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IS09: For length, width, ratio length/width and shape, the time of observation should be just before of become pithy. In the case of not become pithy at all, the time of 180 days after sowing should be used. Exchange the names obovate and ovate. [DE: not discussed in 2009, but exchange would be in agreement with TGP 14 (draft)]

ISF10: finds the comments of Spain not very clear and wonders if they only apply to the D group. Spain is of the opinion that the time of observation should be just before the radish becomes pithy. However, you can only see this when you cut the radish, so it is necessary to keep cutting the radishes on a regular basis. Otherwise, there is a risk that you are too late and since it is a * characteristic the examination will require an extra year of testing

NL10: With regard to the remarks on characteristics 17, 18 and 19 when to observe: in case of a suitable sowing of certain types in order to avoid bolting (after the longest day), 180 days after sowing is a too long period. Varieties other than the small European radish will mostly have a harvest maturity from 40 to 100 days.

NL10: probably there are more shapes to be added, especially of Asian types.

19. 19./17	VG Radish: shape	Racine: forme	Rübe: Form	Raiz: forma		
(*) (+)	(b) transverse elliptic	elliptique transverse	quer elliptisch	elíptica transversal	Fakir (S), Rond rose à très grand bout blanc (S)	1
PQ	circular	ronde	rund	circular	Cerise (S), Tinto (S), Noir gros rond d'hiver (D), Falco (D)	2
	elliptic	elliptique	elliptisch	elíptica	Pico (S), Sutong (D)	3
	narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha		4
	obovate	obovale	verkehrt eiförmig	oboval	Lavergne (S, Note 4 before), Fridolin weiss (D)	5
	rectangular	rectangulaire	rechteckig	rectangular	Clipo (S), Fluo (S), Neptun (D), Noir long maraîcher (D), White Breakfast (D)	6
	obtriangular	obtriangulaire	verkehrt dreieckig	obtriangular	Ovale blanc de Munich (D)	7
	narrow obtriangular	obtriangulaire étroite	schmal verkehrt dreieckig	obtriangular estrecha	Rex (D)	8
	iciclical	en glaçon	eiszapfenförmig	en estalagmita	Blanche transparente (S), De cinq semaines rose 3 (D), Minowase Summer Cross No. 3 (D)	9
	obovate	obovate	verkehrt eiförmig	oboval		10

	English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
	bell shaped		glockenförmig		Roche (S), JP10: Nezumi (D), Sakurajima oomaru (D)	11
	transverse broad elliptic					12
20. new 18. (+)	VG Only for D-Group: Radish: position in soil		Nur für D-Gruppe: Rübe: Sitz im Boden			
QN	(b) very shallow		sehr flach			1
	shallow		flach		Minowase Summer Cross No. 3 (D), Aonaga (D)	3
	medium		mittel		Runder weißer (D), Miyashigenagabuto (D)	5
	deep		tief		Miura (D)	7
	very deep		sehr tief		Suikomi ninengo (D)	9
JP10: We propose to exchange the state names “flat” and “angular”						
21. 20./19 (+)	VG Radish: shape of shoulder	Racine: forme de la partie supérieure	Rübe: Schulterform	Raiz: forma de la parte superior		
PQ	(b) flat	aplatie	flach	aplanada	Bamba (S), Saxa 2 (S), Minowase Summer Cross No. 3 (D)	1
	rounded	arrondie	abgerundet	redondeada	Flamino (S), Rex (D)	2
	conical	conique	konisch	conica	Pernot (S), Blanche transparent (S) Mantanghong (D)	3

	English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
22.	VG Radish: shape of tip	Racine : forme de la pointe	Rübe: Form der Spitze	Raiz: forma de la punta		
21 /20						
(+)	(b) narrow acute	aigue étroite	schmal spitz	aguda angosta	Blanche transparente (S), Minowase Summer Cross No. 3 (D)	1
PQ	acute	aigue	spitz	aguda	Flambo (S), Fridolin weiß (D)	2
	obtuse	obtuse	stumpf	obtusa	De dix-huit jours (S), Ninja (D), Tama Winter (D)	3
	rounded	arrondie	abgerundet	redondeada	Bamba (S), Callisto (S), Noir gros rond d'hiver (D)	4
	truncate	plate	eben	plana	À forcer rond écarlate (S), Jumbo Scarlet (D)	5

DE10: (without green shoulder) should be mentioned in the explanation

JP10: If green color of the sholder should not be taken. We propose to exchange the following example variety "Oshin" and "Akasuji".

23.	VG Radish: Number of colors of skin		Rübe: Anzahl der Farben der Haut			
22 (*)	(without green shoulder)		(außer grüne Schultern)			
(+)						
QN	one		eine		Cerise (S), Saxa 2 (S), Minowase Summer Cross No. 3 (D)	1
	two		zwei		Flamboyant 2 (S), Murasakizukin (D), Oshin (D) Akasuji (D)	2

English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota		
JP10: If green color of the shoulder should not be taken, we propose to delete state (5) green. "Benizonoshunaga" and "Benigeshou".							
HU10: dark pink red has to be between pink and red							
ISF10: Some of the examples given in 24 and TQ question 5.7 are D instead of S according. This should be checked. Noir gros rond d'hiver certainly is D instead of S.							
24. 23.+ 24/21. (*)	VG	Only varieties with Radish: Number of colors of skin: one: Radish: color of skin	Nur Sorten mit Rüben: Anzahl der Farben der Haut: eine: Rübe: Farbe der Haut				
PQ	(b)	white	blanc	weiß	blanco	Rex (S), Minowase Summer Cross No. 3 (D),	1
		yellowish white				Miura (D)	2
		yellow	jaune	gelb	amarillo	Gold Star (S)	3
		brown	brun	braun	marron		4
		green		grün		Aonaga (D)	5
		pink	rose	rosa	rosa	De cinq semaines rose 3 (S)	5
		red	rouge	rot	rojo	JP10: Benizonochunaga (D) Benigeshou (D)	6 (7)
		dark pink red		dunkelrosarot		Ostergruß rosa 2 (S)	7 (6)
		purple	pourpre	purpurn	purpura	Karaineaka (D), Roche (?)	8
		violet	violet	violett	violeta	Hilds blauer Herbst und Winter (S), Violet de Gournay (S)	9
		black	noir	schwarz	negro	Noir gros rond d'hiver (S D)	10

English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
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Informations to be provided by JP

JP10: This Char. is assumed that the lower part of "Radish" be white. But we have the following variety that become exception. In association with Char. No.26, We propos to change this Char. name to "Additional color of skin". What if the additional color is defined as colored (nonwhite). And to be delete the state (1) white.

25.	VG	<u>Only varieties with Radish: Number of colors of skin: two: Radish: color of skin of the upper part</u>	<u>Nur Sorten mit Rüber: Anzahl der Farben der Haut: zwei: Rübe: Farbe des oberen Teils der Rübe</u>				
PQ	(b)	pink	rose	rosa	rosa	De cinq semaines rose 3 (S)	6
		red	rouge	rot	rojo	Benizonochunaga (D)	7
		dark pink red		dunkelrosarot		Ostergruß rosa 2 (S)	8
		purple	pourpre	purpurn	purpura	Karaineaka (D), Roche (?)	9
		violet	violet	violett	violeta	Hilds blauer Herbst und Winter (S), Violet de Gournay (S)	10
		black	noir	schwarz	negro	Noir gros rond d'hiver (S D)	11

Illustration to be provided by JP

JP10: In association with Char. No.25, We propos to change this Char. name to "Distribution of additional color of skin". And the state is settled on to be (1) mainly upper part [Murasakizukin (D)], (2) mainly lower part [Koshin (D)], (3) striped [Akasuji (D)], (4) mainly upper part and striped [Itomaki (D)].

26.	VG	<u>Only for D-Group: only varieties with Radish: Number of colors of skin: two Radish: colored pattern of skin</u>	<u>Nur für D-Gruppe: nur Sorten mit Rüber: Anzahl der Farben der Haut: zwei Rübe: farbiges Muster der Haut</u>			
(+)	(b)	absent		fehlend		Minowase Summer Cross No. 3 (D)
QL		present		vorhanden		Akasuji (D)

JP: In association with Char. No.26, We propos to change this Char. name to "Size of additional color part of skin".

	English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielsorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
27. 25/-	VG <u>Only varieties with Radish: Number of colors of skin: two:Radish: extent of white tip</u>	<u>___</u> :Racine: extension du bout blanc	<u>Nur Sorten mit Rüber: Anzahl der Farben der Haut: zwei: Rübe: Ausdehnung des Weißanteils</u>	<u>___</u> Raiz: extensión del extremo blanco		
QN (+)	very small	très faible	sehr gering	muy pequeña	Demi-long écarlate à très petit blanc 2 (S), Murasakizukin (D)	1
	small	faible	gering	pequeña	Delikat (S), Flamino (S), Oshin (D)	3
	medium	moyenne	mittel	media	Fakir (S), Pépito (S), Aonaga (D)	5
	large	forte	groß	grande	Pernot clair (S), Benikanmi (D)	7
	very large	très forte	sehr groß	muy grande	Rond rose à très grand bout blanc 2 (S), Benizonochunaga (D)	9

All: to check whether only white varieties should be observed?

28. 22/-	VG <u>Only for D-Group: only varieties with Radish: Number of colors of skin: one: Radish: color of skin: white: Radish: green color of shoulder</u>	<u>___</u> Racine: couleur verte du collet	<u>Nur für D-Gruppe: nur Sorten mit Rüber: Anzahl der Farben der Haut: eine: Rübe: Farbe der Haut: weiss: Rübe: Grünfärbung des Kopfes</u>	<u>___</u> : Raiz: color verde del cuello		
QN	(b) absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Minowase Summer Cross No. 3 (D)	1
	weak	faible	gering	débil	Omny (D)	3
	medium	moyenne	mittel	medio	Halblanger weißer Sommer (D)	5
	strong	forte	stark	fuerte		7
	very strong	très fort	sehr stark	muy fuerte	Green Meat (D)	9

English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
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DE10: Propose to delete because already covered by Char. 23 in combination with 25

TWV 09: JP to check whether red color observed is anthocyanin coloration or red skin color

JP: We checked that all red color of the "Radish" depended on anthocyanin coloration. But we agree with DE.

29. -/23.	VG <u>White radish varieties only:</u> Radish: anthocyanin coloration	<u>Variétés à racine blanche seulement :</u> Racine : pigmentation anthocyanique	<u>Nur weiße Rettichsorten:</u> Rübe: Anthocyanfärbung	<u>Solo variedades de raíz blanca:</u> Raiz: pigmentación antociana		
QL	(b) absent	absente	fehlend	ausente	Rex (D)	1
	present	présente	vorhanden	presente	Neekarruhm-weiß (D)	9

DE: propose to have 5 states

30. -/24.	VG <u>Only for D-Group:</u> Radish: ridging of surface	<u>___ Racine : annelé de la surface</u>	<u>Nur für D-Gruppe:</u> Rübe: Ringelung der Oberfläche	<u>___ Raiz: anillada de la superficie</u>		
QN	(b) absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Minowase Summer Cross No. 3 (D)	1
	weak	faible	gering	débil		3
	medium	moyen	mittel	media	Halblanger weißer Sommer (D)	3
	strong	fort	stark	fuerte		5
	very strong	très fort	sehr stark	muy fuerte		9

English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
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TWV 09 : to check whether it should read : Radish: main color of flesh. Additional colors to be provided by China in agreement with Char. 24.

31. VG Radish: main color of flesh 27/25			Rübe: Hauptfarbe des Fleisches			
PQ (b)	translucent white	blanc vitreux	glasigweiß	blanco traslucido	De dix-huit jours (S), Rex (D)	1
	opaque white	blanc mat	mattweiß	blanco opaco	Bamba (S), Saxa 2 (S), Noir gros long d'hiver de Paris (D)	2
	green	vert	grün	verde	Green Meat (D), JP10: Kazafukarami (D)	3
	red	rouge	rot	rojo	Roche (S), Mantanghong (D), JP10: Tenankoshin (D)	4

DE10: Instead of applying the char. only for D-Group, proposal to add S-Group varieties to state 1 in accordance with the grouping of S-Group for all varieties with < 45 days to harvest maturity.

NL10: Small European radishes have a harvest maturity starting from 18 days. The late varieties maybe have a harvest maturity of a little bit less than 45 days. Distinctness in harvest maturity in this type is not recognized in this proposal.

32. VG Only for D-Group: Time of harvest maturity 28/26. (* (+)		Epoque de maturité de récolte	Zeitpunkt der Erntereife	Fecha de madurez de cosecha		
QN	very early	très précoce	sehr früh	muy temprano	(S-Group example)	1
	early	précoce	früh	temprana	Ostergruß rosa 2 (D)	3
	medium	moyenne	mittel	media	Rex (D)	5
	late	tardive	spät	tardia	Noir gros rond d'hiver (D)	7

	English	français	deutsch	español	Example Varieties ⁽¹⁾ / Exemples ⁽¹⁾ / Beispielssorten ⁽¹⁾ / Variedades ejemplo ⁽¹⁾	Note/ Nota
DE10: According to the current explanation it is “Time to become pithy” and not “Tendency...”.						
33.	VG Radish: tendency to C become pithy	Racine: tendance à se creuser	Rübe: Neigung zum Pelzigwerden	Raiz: tendencia a ahuecarse		
29/27.						
(+)						
PQ	(b)	absent or very weak			Alttox (S), Carnita (S), Ika (S)	1
		weakly expressed			Aviso (S)	2
		strongly expressed			Blanche transparente (S), Cherry Belle (S), Rex (D)	3

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

NL10: Small European radishes have a harvest maturity starting from 18 days. The late varieties maybe have a harvest maturity of a little bit less than 45 days. Distinctness in harvest maturity in this type is not recognized in this proposal.

Grouping for *Raphanus sativus* L.:

Grouping for varieties to S- Group and D-Group is based on the time of harvest maturity (see char.. 32):

	Harvest maturity
D-Group	> 60 days
S-Group	< 45 days

DE10: propose to define the classification more specific than agreed in the minutes

Those varieties of which the harvest maturity falls between 45 and 60 days should be classified in a next step taking into account length and diameter of the radish as follows:

	Length of radish (for elongated varieties)	Diameter of radish (for rounded varieties)
D-Group	>15 cm	>3.5 cm
S-Group	<10 cm	<2.5 cm

Varieties which fall still between D-Group and S-Group should be tested in both groups.

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 seedling and the cotyledon should be made when the first true leaf is expanded.
- (b) All observations on the leaf and the radish should be made at the time of harvest maturity.

NL10: 45 days is much too late for small European radishes, the proposal for the observation will become very complicated.

8.2 *Explanations for individual characteristics*

Ad. 1: Ploidy

The ploidy status of the plant can be checked by different methods as determination of the number

- of chromosomes of the root meristem
- and length of stoma on the lower side of the cotyledon (tetraploid varieties have a longer stoma than diploid varieties)
- of 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).

Another efficient method to determine the ploidy status is the flow cytometry.

Ad. 7.: Leaf: length

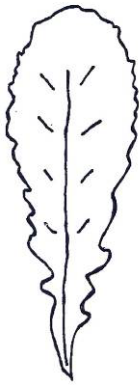
ES09: propose to add an explanation concerning the time of observation for instance: to be observed 45 days after sowing for all varieties, Scale 3-7 and 90 days after sowing, Scale 3 to 9 only for varieties not pithy and not bolting at that time [not discussed 2009]

Ad. 8.: Only for D-Group: Leaf. width

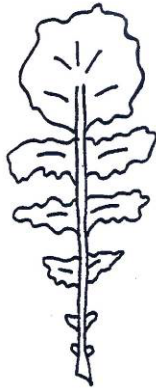
ES09: propose to add an explanation concerning the time of observation for instance: to be observed 45 days after sowing for all varieties, Scale 3-7 and 90 days after sowing, Scale 3 to 9 only for varieties not pithy and not bolting at that time [not discussed in 2009]

Ad. 12.: Leaf blade: lobes

Parts of the leaf blade are considered as lobes if the cutting is the distance between the margin of the leaf and the mid-rib.






1
absent



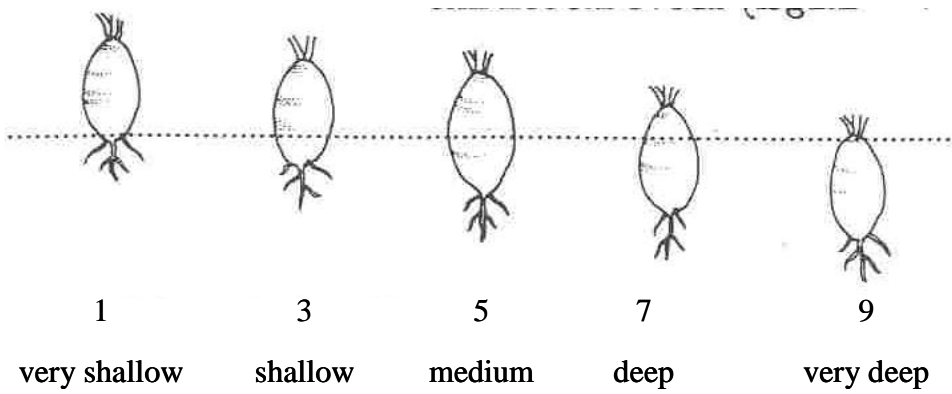
9
present

Ad. 19.: Radish: shape

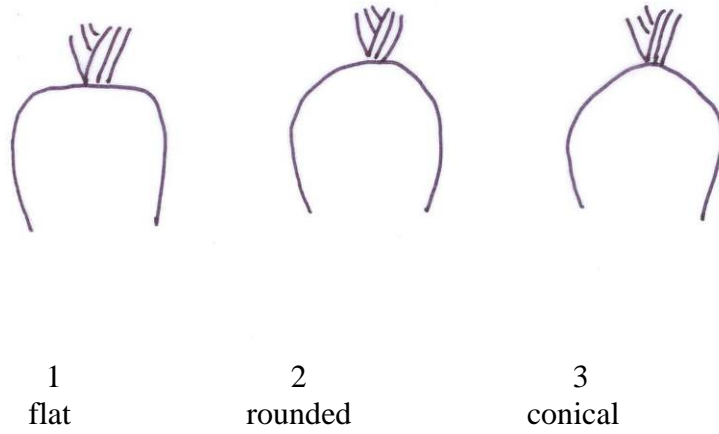
		Towards apex			Towards base	
Width : Ration length / width	narrow		Position of broadest part			
			9 cylindrical			
			6 rectangular			
			4 narrow elliptic			8 narrow triangular
		11 bell shaped	10 obovate	3 elliptic	5 ovate	7 triangular
				2 circular		
				12 transverse broad elliptic		
broad			1 transverse elliptic			

Only for D-group:

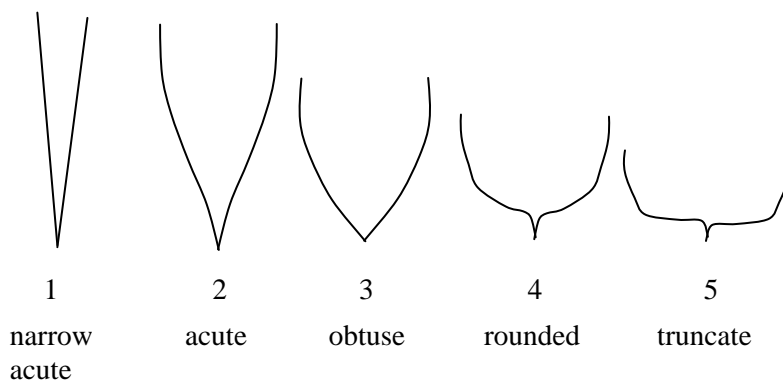
Ad. 20.: Radish: position in soil



Ad. 21.: Radish: shape of shoulder



Ad. 22.: Radish: shape of tip



Ad 23.: Radish: Number of colors of skin

Green color of the shoulder should not be taken in consideration as a separate color, because it is influenced by the position in the soil of the radish and light.

Ad. 27.: Only varieties with Radish: Number of colors of skin: two: Radish: extent of white tip

All: Provide an explanation?

Ad. 32.: Time of harvest maturity

ALL: We have to find a satisfying definition.

HU10: propose to give the diameter like at the kohlrabi TG:

Harvest maturity is considered as being reached if 50% of S-group reach 2,5 cm diameter and D-group 3,5 cm diameter.

(TG 65/4 Kohlrabi

Ad. 23: Harvest maturity

Harvest maturity is considered as being reached if 50% of kohlrabis reach 7 cm diameter in the greenhouse or 8 cm diameter in the open field.)

Ad. 33.: Radish: Tendency to become pithy

All: to improve the explanation

For the determination of this characteristic an additional replication should be grown. After having reached the harvest maturity radishes should be repeatedly harvested and cut in cross section to determine the tendency of becoming pithy. The date of days after sowing is to be recorded when 50% of the plants show this characteristic. Varieties which are very early pithy correspond to the expression very strong, varieties becoming pithy very late correspond to the expression absent or very weak.

HU: agree with this explanation but how many plants have to be cut and how many days have to be observed? May be at S-group radish has to be cut every day or every second day after harvest time 10 or 20 pieces and D-group every third or fifth day 10 pieces? Length of observation can be at S-group 7-10 days and D-group 10-14 days?

Don't have to raise the amount of the seed quantity because of this additional replication?

NL10 and DE10 propose to consider the use of BBCH growth stages (not yet part of Chapter 7):

KEY FOR THE GROWTH STAGES

Phenological growth stages and BBCH-Identification keys of root and stem vegetables (radish = *Raphanus sativus* L. ssp.) Feller et al., 1995 a

Code	Description
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Principal growth stage 0: Germination

09: Emergence: cotyledons break through soil surface

Principal growth stage 1: Leaf development (Main shoot)

10: Cotyledons completely unfolded; growing point or true leaf initial visible

19: 9 or more true leaves unfolded

Principal growth stage 4: Development of harvestable vegetative plant parts

41: Roots beginning to expand (diameter > 0,5 cm)

45: 50 % of the expected root diameter reached

48: 80 % of the expected root diameter reached

49: Expansion complete; typical form and size of roots reached

9. Literature

Vogel, G., 1996: Handbuch des speziellen Gemüsebaues, Verlag Eugen Ulmer, Stuttgart, DE.

Wonneberger, C., Keller, F., Bahnmüller, H., 2004: Gemüsebau. Verlag Eugen Ulmer, Stuttgart, DE.

Uwe Meyer (Ed.) 1997: Growth stages of mono- and dicotyledonous plants: BBCH Monograph, Biologische Bundesanstalt für Land- und Forstwirtschaft (ed.). Wien: Blackwell Wiss.-Verlag, pp. 100 – 105.

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:												
		Application date: (not to be filled in by the applicant)												
<p style="text-align: center;">TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p> <p>ISF10: "In the case of hybrid varieties, which are the subject of an etc." should be deleted (already mentioned this in 2009).</p> <p>In the case of hybrid varieties which are the subject of an application for plant breeders' rights, and where the parent lines are to be submitted as a part of the examination of the hybrid variety, this Technical Questionnaire should be completed for each of the parent lines, in addition to being completed for the hybrid variety.</p>														
<p>1. Subject of the Technical Questionnaire (Please indicate the relevant botanical name):</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 5px;">1.1.1 Botanical name</td> <td style="width: 50%; padding: 5px;"> <div style="border: 1px solid black; padding: 2px;"><i>Raphanus sativus</i> L. var. <i>niger</i> (Mill.) S. Kerner</div> <div style="border: 1px solid black; padding: 2px;"><i>Raphanus sativus</i> L. var. <i>longipinnatus</i> L.H. Bailey</div> </td> <td style="width: 20%; text-align: center; vertical-align: middle;">[]</td> </tr> <tr> <td style="padding: 5px;">1.1.2 Common name</td> <td style="padding: 5px;"> <div style="border: 1px solid black; padding: 2px;">Black Radish, Daikon radish, Oriental radish</div> </td> <td></td> </tr> <tr> <td style="padding: 5px;">1.2.1 Botanical name</td> <td style="padding: 5px;"> <div style="border: 1px solid black; padding: 2px;"><i>Raphanus sativus</i> L. var. <i>sativus</i></div> </td> <td style="text-align: center; vertical-align: middle;">[]</td> </tr> <tr> <td style="padding: 5px;">1.2.2 Common name</td> <td style="padding: 5px;"> <div style="border: 1px solid black; padding: 2px;">Radish, Garden radish, European, radish, Chinese small radish, Western radish</div> </td> <td></td> </tr> </table> <p>Please mark the botanical name of the application.</p>			1.1.1 Botanical name	<div style="border: 1px solid black; padding: 2px;"><i>Raphanus sativus</i> L. var. <i>niger</i> (Mill.) S. Kerner</div> <div style="border: 1px solid black; padding: 2px;"><i>Raphanus sativus</i> L. var. <i>longipinnatus</i> L.H. Bailey</div>	[]	1.1.2 Common name	<div style="border: 1px solid black; padding: 2px;">Black Radish, Daikon radish, Oriental radish</div>		1.2.1 Botanical name	<div style="border: 1px solid black; padding: 2px;"><i>Raphanus sativus</i> L. var. <i>sativus</i></div>	[]	1.2.2 Common name	<div style="border: 1px solid black; padding: 2px;">Radish, Garden radish, European, radish, Chinese small radish, Western radish</div>	
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1.1.2 Common name	<div style="border: 1px solid black; padding: 2px;">Black Radish, Daikon radish, Oriental radish</div>													
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TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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:
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#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross []
 (please state parent varieties)

(.....)	x	(.....)
female parent		male parent

(b) partially known cross []
 (please state known parent variety(ies))

(.....)	x	(.....)
female parent		male parent

(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:
<p>4.2 Method of propagating the variety</p> <p>4.2.1 Seed-propagated varieties</p> <p>(a) Self-pollination []</p> <p>(b) Cross-pollination</p> <p> (i) population []</p> <p> (ii) synthetic variety []</p> <p>(c) Hybrid []</p> <p>(d) Other []</p> <p> (please provide details)</p>		

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
DE: To be completed after agreement of the grouping characteristics.		
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 Ploidy (1)		
diploid	Arista (S), Halblanger weißer Sommer (D)	2 []
tetraploid	Rex (D)	4 []
5.2 Leaf: length (7)		
very short		1 []
very short to short		2 []
short	Cerise (S), Saxa 2 (S), Runder weißer (D), Sutong (D)	3 []
short to medium		4 []
medium	Amored (S) Novo (S), Noir long maraîcher (D), Rex (D)	5 []
medium to long		6 []
long	National 2 (S), Noir gros rond d'hiver (D)	7 []
long to very long		8 []
very long		9 []
5.3 Leaf blade: lobes (12)		
absent	Viola (S), Rex (D), Servatius (D)	1 []
present	Cherry Belle (S), Halblanger weißer Sommer (D)	9 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
Characteristics	Example Varieties	Note
5.4 Radish: length (17)		
very short	runder weißer (D round type) JP10: Noir gros rond d'hiver (D)	1 []
very short to short		2 []
short	Noir gros rond d'hiver (D round type) JP10: Rex (D)	3 []
short to medium		4 []
medium	Gentoku (D), Neptun (D), JP10: Minowase Summer Cross No. 3	5 []
medium to long		6 []
long	Ninja (D), Servatius (D) JP10: Suikomi ninengo (D)	7 []
long to very long		8 []
very long	April Cross (D), Martina (D) JP10: Surato (D)	9 []
5.5 (18) Radish:diameter		
very small	JP10: Ostergruß rosa 2 (D)	1 []
very small to small		2 []
small	Gaudry 2 (S), JP10: Ostergruß rosa 2 (D), Noir gros round d'hiver (D)	3 []
small to medium		4 []
medium	JP10: Rex (D), Minowase Summer Cross No. 3 (D)	5 []
medium to large		6 []
large	Rond rose à très grand bout blanc (S), JP10: Noir gros rond d'hiver (D), Koshin (D)	7 []
large to very large		8 []
very large	JP10: Sakurajima oomaru (D)	9 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
Characteristics		Example Varieties	Note
5.6 Radish: shape (19)			
transverse elliptic		Fakir (S), Rond rose à très grand bout blanc (S)	1 []
circular		Cerise (S), Tinto (S), Noir gros rond d'hiver (D), Falco (D)	2 []
elliptic		Pico (S), Sutong (D)	3 []
narrow elliptic			4 []
obovate		Lavergne (S), Fridolin weiss (D)	5 []
rectangular		Clipo (S), Fluo (S), Neptun (D), Noir long maraîcher (D), White breakfast (D)	6 []
obtriangular		Oval blanc de Munich (D)	7 []
narrow obtriangular		Rex (D)	8 []
iciclical		Blanche transparente (S), De cinq semaines rose 3 (D), Minowase Summer Cross No. 3 (D)	9 []
obovate			10 []
bell shaped		Roche (S), JP10: Nezumi (D), Sakurajima oomaru (D)	11 []
transverse broad elliptic			

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
Characteristics	Example Varieties	Note
5.7 <u>Only varieties with Radish: Number of colors of skin: one:</u> (24) <u>Radish: color of skin</u>		
white	Rex (S), Minowase Summer Cross No. 3 (D)	1 []
yellowish white	Miura (D)	2 []
yellow	Golden Star (S)	3 []
brown		4 []
green	Aonaga (D)	5 []
pink	De cinq semaines rose 3 (S)	5 []
red	Benizonochunaga Benigesho (D)	6 []
dark pink red	Ostergruß rosa 2 (S)	7 []
purple	Karaineaka (D), Roche (S)	8 []
violet	Hilds blauer Herbst und Winter (S), Violet de Gournay (S),	9 []
black	Noir gros rond d'hiver (S-D)	10 []
5.8 <u>Only varieties with Radish: Number of colors of skin: two:Radish: extent of white tip</u> (27)		
very small	Demi-long écarlate à très petit blanc 2 (S), Murasakizukin (D)	1 []
very small to small		2 []
small	Delikat (S), Flamino (S), Oshin (D)	3 []
small to medium		4 []
medium	Fakir (S), Pépito (S), Aonaga (D)	5 []
medium to large		6 []
large	Pernot clair (S), Benikanmi (D)	7 []
large to very large		8 []
very large	Rond rose à très grand bout blanc 2 (S), Benizonochunaga (D)	9 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
Characteristics	Example Varieties	Note	
5.9 Time of harvest maturity			
(32)			
very early	(S-Group example)	1 []	
very early to early		2 []	
early	Ostergruß rosa 2 (D)	3 []	
early to medium		4 []	
medium	Rex (D)	5 []	
medium to late		6 []	
late	Noir gros rond d'hiver (D)	7 []	
late to very late		8 []	
very late		9 []	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
<p>6. Similar varieties and differences from these varieties</p> <p><i>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.</i></p>			
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
<i>Example</i>	<i>Radish: color of skin</i>	<i>white</i>	<i>yellow</i>
<p>Comments:</p>			

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
<p>#7. Additional information which may help in the examination of the variety</p> <p>7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>(If yes, please provide details)</p> <p>7.2 Are there any special conditions for growing the variety or conducting the examination?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>(If yes, please provide details)</p> <p>7.3 Other information</p>		
<p>8. Authorization for release</p> <p>(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>(b) Has such authorization been obtained?</p> <p>Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>If the answer to (b) is yes, please attach a copy of the authorization.</p>		

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:												
<p>9. Information on plant material to be examined or submitted for examination.</p> <p>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.</p> <p>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:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 70%;">(a) Microorganisms (e.g. virus, bacteria, phytoplasma)</td> <td style="width: 15%;">Yes []</td> <td style="width: 15%;">No []</td> </tr> <tr> <td>(b) Chemical treatment (e.g. growth retardant, pesticide)</td> <td>Yes []</td> <td>No []</td> </tr> <tr> <td>(c) Tissue culture</td> <td>Yes []</td> <td>No []</td> </tr> <tr> <td>(d) Other factors</td> <td>Yes []</td> <td>No []</td> </tr> </table> <p>Please provide details for where you have indicated “yes”.</p> <p>.....</p>			(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 []
(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 []												
<p>10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:</p> <p>Applicant's name <input style="width: 550px; height: 20px;" type="text"/></p> <p>Signature <input style="width: 350px; height: 25px;" type="text"/> Date <input style="width: 180px; height: 25px;" type="text"/></p>														

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