

UPOV

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-TG/64/7(proj.2)

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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

Raphanus sativus L.

UPOV Code: RAPHA_SAT_NIG

(*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-third session, to be held in Beijing, from April 20 to 24, 2009

Alternative Names:*

Botanical name	English	French	German	Spanish
<i>Raphanus sativus</i> L. var. <i>sativus</i> (Small radish type)	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 (Daikon radish type)	Black Radish	Radis d'été, d'automne et d'hiver	Rettich	Rabano de invierno, Rabano negro

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

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1. Subject of these Test Guidelines

NL06: *as in cabbage (TG/48/7): Groups without botanical classification*

These Test Guidelines apply to all varieties of *Raphanus sativus* L. var *sativus* (Small radish type); *Raphanus sativus* L. var. *niger* (Mill.) S. Kerner and *Raphanus sativus* L. var. *longipinnatus* L.H. Bailey (Daikon radish type).

NL09: Proposes have two separate guidelines, considering differences in number of plants and trial layout, different measures due to the cultural background and the outcome of the Ringtest 2008. [Complete comments are included in Annex I]

ISF09: feels that it is very complicated to combine the two species in one protocol. A large number of characters will be necessary and this will make the examination more expensive. ISF, therefore, prefers to keep two protocols separate.

KR09: Basically, KR had been proposed to combine the two guidelines in one.

ES09: ES agrees with to draft one common guideline because the division of the species in two crops clearly separated is not possible as the majority agreed in the discussion of the results of the ring test in 2008. To find several grouping characteristics to manage the reference collection should be more appropriate. [Complete comments are included in Annex II]

ES thinks the scales in general can be unique for the whole collection, having in mind that the big quantitative differences inter varieties are observed when they are measured in very different stages of development of the plants. This problem would be solved measuring or assessing quantitative characteristics in well established times. [Proposals are included in Annex II]

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of seed.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

100 g or 10, 000 seeds.

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

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

2.6 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*

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 *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 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.

3.4.2 Each test should be designed to result in a total of at least 60 plants for Daikon radish types or 400 plants for Small radish types which should be divided between two or more replicates.

CN09 Proposes 60 plants for Small radishes

HU09: Proposes 200 plants for Small radishes

3.5 *Number of Plants / Parts of Plants to be Examined*

Unless otherwise indicated, all observations on single plants 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.

3.6 *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.

4.2 *Uniformity*

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:

4.2.1 Cross-pollinated varieties

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 plants, 13 off-types are allowed.

HU09: It is not clear: why are the two characteristics (17/21) emphasized?

4.2.2 Single cross hybrids and inbred lines

For the assessment of uniformity of single cross 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.

4.2.3 Hybrid varieties

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. In the case of single cross hybrids, the uniformity standards are set out in Section 4.2.2.

[Is it necessary to distinguish between single cross hybrids and hybrids?]

HU09: not necessary to distinguish between single cross hybrids and hybrids

CN09: not necessary to distinguish

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 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 material supplied.

~~4.3.3 Where appropriate, or in cases of doubt, the stability of a hybrid variety may, in addition to an examination of the hybrid variety itself, also be assessed by examination of the uniformity and stability of its parent lines.~~

TWV 2007: agreed to be deleted

HU09: we don't support the examination of parent lines

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:

DE 09: to be agreed after decision about characteristics

Small Radish	Daikon Radish:
(a) Leaf: length, (characteristic 6)	(a) Ploidy (characteristic 1)
(b) Root: shape (characteristic 19)	(b) Leaf blade: lobes (division to

	midrib) (characteristic 10)
(c) Root: coloration of skin (characteristic 22)	(c) Radish: shape (characteristic 17)
(d) Bicolored type - Root: extent of white tip (characteristic 25)	(d) Radish: color of skin (characteristic 21)
(e) Development in short days (characteristic 30)	

CN09 proposes to add *Season type: spring or autumn*
 28/26 Time of harvest maturity: early and (medium) late
 23 Radish: Color of skin

RO09: b,c,d, to be renamed. Radish instead of Root

HU09: instead of ‘development in short days’ to keep ‘time of harvest maturity’

ES09: For grouping the ancient division in two groups: small and black radish must be withdrawn. A more complex grouping should be more practice. For instance some possible groups. (Examples of groups please refer attachment of ES comments).

ES proposes to have: *-/ new 17b Radish: Ratio length/diameter*
 22 Radish: Number of colors
 23 Radish: Color of skin
 29/ Radis: Tendency to become pithy
 New: Flesh: Intensity of anthocyanin coloration

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

5.5 To establish if a variety is to be considered as Small radish or as Daikon radish, the explanation in Chapter 8.1 should be considered. [DE09: see TG46/7 Onion Shallot]

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*

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.

6.3 *Types of Expression*

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 *Example Varieties*

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

6.5 *Legend*

(*) Asterisked characteristic – see Chapter 6.1.2

QL: Qualitative characteristic – see Chapter 6.3

QN: Quantitative characteristic – see Chapter 6.3

PQ: Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS: See Chapter 3.3.2

C: special test

(D)/(S) Type of example variety D = Daikon radish type
S = Small radish type

(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

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
1./1. MG Ploidy (* (+) C		Ploidie	Ploidie	Ploidía		
QL	diploid	diploïde	diploid	diploïde	Arista (S), Halblanger weißer Sommer (D)	2
	tetraploid	tétraploïde	tetraploid	tetraploïde	Rex (D)	4
2./2. VG Seedling: (* anthocyanin coloration of hypocotyl		Plantule: pigmentation anthocyanique de l'hypocotyle	Keimpflanze: Anthocyanfärbung des Hypokotyls	Plantula: pigmentacion antocianica del hipocotilo		
QL (a)	absent	absente	fehlend	ausente	Belcanto (S), Kocto (S), Minowase Summer Cross Nr. 3 (D)	1
	present	présente	vorhanden	presente	Cerise (S), Kaiser (D), Rex (D)	9
3./3. VG Cotyledon: size		Cotyledon: taille	Keimblatt: Größe	Cotiledon: tamaño		
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
4/- VG Foliage: width of attachement		Feuillage: largeur de l'attache au collet	Laub: Breite des Ansatzes	Follaje: anchura de la inserción al cuello		
QN	narrow	fine	schmal	estracha	Flamino (S), Ostergruß rosa 2, (D)Rex (D)	3
	medium	moyen	mittel	medio	Apache (S), Flambo (S), Neptun (D)	5
	wide	large	breit	ancha	April Cross (D), Rond écarlate (S)	7

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
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From TG 64, Correlated with "Number of fully developed leaves", wide attachment = many leaves, more variation in Daikon radish than in Small radish?

RO09: The states of expression are only for small radishes. For summer types, the variation is medium and for winter types there is a wide variation between the varieties.

ES09: 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

4.	VG	Foliage: number of fully developed leaves	Feuillage: nombre de feuille à complet développement	Laub: Anzahl der ausgewachsenen Blätter	Follaje: numero de hojas completamente desarrolladas	
QN	(b)	few	petit	gering	bajo	Rex, Ostergruß rosa 2 3
		medium	moyen	mittel	medio	Neptun 5
		many	grand	groß	alto	April-Cross 7

NL09: agrees to delete

CN09: proposes to keep

ES09: propose to add an explanation concerning the time of observation for instance : Observations should be done 45 days after sowing. For varieties with long cycle, a second observation should be made, for instance 90 days from sowing (only for varieties not pithy and not bolted at this time)

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 liegend	horizontal	Bel Image (S), Mikura Cross (D), Ronde Witte (S), Minowase Summer Cross Nr. 3 (D) 5

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

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

7./7.	VG Leaf blade: shape	Limbe: forme	Blattspreite: Form	Limbo: forma		
(+)						
QN	(b) narrow obovate	obovale étroit	schmal-eiförmig	oboval estrecho	Fakir (S), Florian (D)	1
	medium obovate	obovale moyen	verkehrt-eiförmig	oboval	Cyrus (S), April Cross (D)	2
	broad obovate	obovale large	breit-eiförmig	oboval ancho	Balkar (S), Mantanghong (D) Rex (D)	3

Proposal from NL in 2007 to substitute "Leaf blade: shape" (7) with "Leaf: width" (7b)

CN09: proposes to delete

RO09: agrees the proposal of NL

HU09: agrees the proposal of NL

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

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielsorten/ Variedades ejemplo	Note/ Nota
new 7b. (+)	VG Leaf: width	Limbe: forme	Blattspreite: Form	Limbo: forma		
QN (b)	narrow		schmal		Fakir (S), Florian (D)	3
	medium		mittel		Cyrus (S), April Cross (D)	5
	broad		breit		Balkar (S), Mantanghong (D), Rex (D)	7

*TWV 2007: To check whether all varieties have obovate shaped leaves
 DE agrees to NL proposal*

8/-	VG Leaf blade: Shape of apex	Limbe: forme du sommet	Blattspreite: Form der Spitze	Limbo: forma del ápice		
QN (b)	pointed	pointu	schmal	Puntiagudo	Korund (S), Paradiso (S)	1
	intermediate	intermédiaire	mittel			2
	rounded	arrondi	abgerundet	redondeado	Neckarperle (S), Sora (S)	3

From TG 64 Char8 , DE likes to question whether this char. has discriminative power and proposes to delete it

*NL09: (and 07) To have an explanation or delete it
 HU09 agrees to delete*

9./8.	VG Leaf blade: color	Limbe: couleur	Blattspreite: Farbe	Limbo: color		
PQ (b)	green	vert	grün	verde	Ipox (S), Minowase Summer Cross Nr. 3 (D), Saxa 2 (S)	1
	yellowish green	jaunâtre	gelblich grün	amarillento	Florent (S), Rex (D), Scarlet Globe (S),	2
	greyish green	grisâtre	gräulich grün	grisáceo	Flair (S), Polka (S), Testo (S), Unicorn (D)	3

*In TG 64 Char. 9 “Leaf blade: hue of green color” //
 DE likes to question whether this char. has discriminative power and “greyish green” might rather be glaucosity or waxiness?
 Further: yellowish green is correlated with Char. 9 Note 3 “light”.
 NL09: it is discriminative, therefore keep it
 HU09: in the TG64/6 and 63/6 is the intensity of green color. HU proposes to keep it*

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

TWV 2007: agreed to read "Leaf blade: Intensity of colour"

HU09: Should be "Leaf blade: intensity of green color"

-/10. 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)		
QL (b)	absent	absents	fehlend	ausente	NL09 a candidate variety under exam. (S), Rex (D), Servatius (D)	1
	present	présents	vorhanden	presente	NL09: add Cherry Belle (S), Halblanger weißer Sommer (D)	9

Not in TG 64, Applicable for Small radish? Example varieties?

NL09: applicable for Small radish

RO09: Lobes are present in Small radish

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielsorten/ Variedades ejemplo	Note/ Nota
11./11 VG (*)	<u>Varieties with lobes divided to midrib only: Leaf blade: number of lobes (as for 10)</u>	<u>Variétés.... : Limbe: nombre de lobes (comme pour 10)</u>	<u>Nur für Sorten mit Teilung bis zur Mittelrippe: Blattspreite: Anzahl Lappen (wie unter 10)</u>	<u>Solo variedades de...: Limbo: numero de lobulos (como para 10)</u>		
QN (b)	very few	très petit	sehr gering	muy bajo	Ostergruß rosa 2 (D), Saxa 2 (S)	1
	few	petit	gering	bajo	Halblanger weißer Sommer (D), Ilka (S), Nelson (S),	3
	medium	moyen	mittel	medio	Cracou (S), De cinq semaines rose (D)	5
	many	grand	groß	alto	Cherry Belle (S), Minowase Summer Cross Nr. 3 (D), Noir long maraîcher (D)	7
	very many	très grand	sehr groß	muy alto	Mikura Cross (D)	9

In a different way in TG 64 Char. 11, applicable for Small radish? Example varieties correct?

NL09 applicable for Small radish and example varieties correct

12.	VG	Leaf blade: size of terminal lobe	Limbe: taille du lobe terminal	Blattspreite: Größe des Endlappens	Limbo: tamaño del lobula terminal		
QN (b)	small	petit	klein	pequeno	Omny		3
	medium	moyenne	mittel	medio	Hilds blauer Herbst und Winter, Rose d'hiver de Chine		5
	large	grand	groß	grande	Sutong		7

Not in TG 64

NL proposed 2008 to delete "Leaf blade: size of terminal lobe" DE agrees

HU09: agrees

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
12./- VG	Leaf blade: incisions of margin	Limbe: découpures du bord	Blattspreite: Randeinschnitte	Limbo: incisiones del margen		
QL	absent	absentes	fehlend	aussente	Fury (S)	1
	present	présentes	vorhanden	presente		9

Only in TG 64 Char. 12, DE propose to merge with Char. 13 Note 1

NL09: agrees with the proposal to merge with Char. 13

HU09: agrees

13./13 VG	Leaf blade: depth of incisions of margin	Limbe: profondeur des découpures du bord	Blattspreite: Tiefe der Randeinschnitte	Limbo: profundidad de las incisiones del borde		
QN (b)	absent or very shallow		fehlend oder sehr flach	Fury (S)		1
	shallow	peu profondes	flach	poco profundas	Apolo (S), Blanche transparente (S), Neptun (D)	3
	medium	moyennes	mittel	medias	Cracou (S), April Cross (D)	5
	deep	profondes	tief	profundas	Falco (D), Flamino (S), Hilds blauer Herbst und Winter (D), Saxa 2 (S)	7

14. VG Leaf blade: pubescence

QN	weak					3
	medium					5
	strong					7

Only TG 64 Char. 14, proposed to delete on TWV 42 2008, DE agrees

HU09 agrees

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
15+ 16. /14.	VG	Petiole: anthocyanin coloration	Pétiole: pigmentation anthocyanique	Blattstiel: Anthocyanfärbung	Pecíolo: pigmentacion antocianica	
QL QN	(b) absent or very weak	absente	fehlend oder sehr schwach	ausente	April Cross (D), Fakir (S), Noir gros rond d'hiver (D), Omny (D)	1
	weak		schwach		Blanche transparente (S), Flamino (S), Mirabeau (S),	3
	medium		mittel		Erfurter Riesenrot (S), Forro (S)	5
	strong		stark		Pernot (S)	7
	very strong		sehr stark			9
	present	présente	vorhanden	presente	Flamboyant 2 (S), Rose d'hiver de Chine (D), Violet de Gournay (D), Rex (D)	9

TG 64 Char 15 and 16 are merged

*CN09: Proposes to keep with the states of expression : “absent” and “present”
 HU09 agrees*

-/15. (*)	MS/ VG	Radish: length	Racine: longueur	Rübe: Länge	Raiz: longitud		
QN	(b)	very short	très courte	sehr kurz	muy corta	Runder weißer (D- round type)	1
		short	courte	kurz	corta	Noir gros rond d'hiver (D - round type)	3
		medium	moyenne	mittel	media	Gentoku (D), Neptun (D),	5
		long	longue	lang	larga	Ninja (D), Servatius (D)	7
		very long	très longue	sehr lang	muy larga	April Cross (D), Martina (D)	9

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
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Not in TG 64

HU09 proposes: For Daikon type: Radish: length

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

17	Root: Thickness					
	thin					3
	medium					5
	thick					7

TG 64 Char. 17, Only for small radish Char. was proposed to be deleted, Char is correlated to diameter.

RO09: agrees to delete

HU09: agrees to delete

18./16 MS/ VG	Radish: diameter	Racine:	Rübe: Durchmesser	Raiz:		
QN (b)	small	petit	klein	pequeno	Clipo (S), Ostergruß rosa 2 (D)	3
	medium	moyenne	mittel	media	Apolo (S), Cerise (S), Flamboyant (S), Rex (D)	5
	large	grand	groß	grande	Noir gros rond d'hiver (D), Pontvil (S), Rond rose à très grand bout blanc (S)	7

To be considered: "Radish" or "Root"? //Comparable to TG 64 Char. 18 Radish: width of root?

NL09: considers to use the word "Radish" to avoid any confusion with the not swollen root.

RO09: radish

HU09: propose to use "root" instead of "radish" at every characteristic

S09: 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

2007: TWV: Check whether there is a botanical term for "radish"

NL proposes "root", the lower (swollen) part of the radish

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
19./17 (*) (+)	VG Radish: shape	Racine: forme	Rübe: Form	Raiz: forma		
PQ (b)	transverse elliptic	elliptique transverse	quer elliptisch	elíptica transversal	Fakir (S), Rond rose à très grand bout blanc (S)	1
	circular	ronde	rund	circular	Cerise (S), Falco (D), Noir gros rond d'hiver (D), Tinto (S)	2
	elliptic	elliptique	elliptisch	elíptica	Pico (S), Sutong (D)	3
	narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha	Lavergne (S)	4
	obovate	obovale	verkehrt eiförmig	oboval	Fridolin weiss (D)	5
	broad rectangular		breit rechteckig		Bamba (S), Pernot (S)	[5] 6
	medium rectangular	rectangulaire	mittel rechteckig	rectangular	Clipo (S), Fluo (S), Neptun (D), Noir long maraîcher (D), White Breakfast (D)	6 7
	narrow rectangular		schmal rechteckig		Apolo (S), Famboyant 2 (S)	8
	obtriangular	obtriangulaire	verkehrt dreieckig	obtriangular	Ovale blanc de Munich (D)	7-9
	narrow obtriangular	obtriangulaire étroite	schmal verkehrt dreieckig	obtriangular estrecha	Rex (D)	8 10
	iciclical	en glaçon	eiszapfenförmig	en estalagmita	Blanche transparente (S), De cinq semaines rose 3 (D), Minowase Summer Cross Nr. 3 (D)	9 11
	ovate	ovate	eiförmig			10 12
	bell shaped		glockenförmig		Roche (S)	11 13

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
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Differences in expressions and notes between S and D! Two scales or one?

Explanation will be updated after agreement on the states

RO09: one scale

HU09: one scale is enough. Proposal: it is enough 1 rectangular shape not 3 (see Ch.19/17). HU proposes to choose only one from the rectangular and the iciclical shape because there is difference between these two shapes only in the length. There is character for the shoulder, base, length, diameter and length/diameter ratio. It is enough to make differences between the rectangular and iciclical shape and to use only one of them.

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. Exchange the names obovate and ovate

-/ new 17a.	VG	Radish: postion of maximum diameter	Rübe: Position des größten Durchmessers		
(+)					
PQ	(b)	towards apex	zur Spitze hin	Rex (<i>add. DE</i>)	3
		at middle	in der Mitte	Runder weißer, Sutong (<i>add. DE</i>)	5
		towards base	zur Basis hin		7

Proposal 2008: Instead of 17. Radish: Shape // NL 2008: No replacement of 17

NL09: keep the rejection of the replacement, because with this characteristic only, one cannot dicriminate ovate (convex seen from the outside) and bell-shaped (convex and concave seen from the outside)

ES09: agrees with the characteristic

-/new 17b.		Radish: length in relation to diameter	Rübe: Länge im Verhältnis zu Durchmesser		
(+)					
PQ	(b)	very small	sehr klein	JP09: Sakurajimoomaru (D)	1
		small	klein	ES09 Fanal, Runder weißer (D)	3
		medium	mittel	ES09 Flamboyant, Noir gros rond d'hiver (D)	5
		large	groß	ES09 Sutong (D), add Unicorn (D)	7
		very large	sehr groß	ES09 Unicorn (D), JP09: Surato (D)	9

Proposal 2008 Instead of 17. Radish: Shape // 2008 NL: In addition to 17, and to be named "Ratio: length/diameter"

RO09: support character name "Ratio: length/diameter"

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. Scale 1-9

JP09: [Pictures will be presented for example var. 1 and 9 on 43. session]

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
-/new 18.	VG Radish: position in soil		Rübe: Sitz im Boden			
(+)						
QN	(b) very shallow		sehr flach			1
	shallow		flach		JP09 Aonaga (D), JP09: ex. var. should be note 5? Minowase Summer Cross Nr. 3 (D)	3
	medium		mittel		Runder weißer (D), JP09: Miyashigenagabuto (D)	5
	deep		tief		JP09: Miura (D)	7
	very deep		sehr tief		JP09: Suikomininenga (D)	9

Also applicable in Small radish? Example varieties
 2008 NL: Agrees to add char.

*JP09: [Pictures will be presented on 43. session]
 RO09: also for Small radishes
 ES09: example varieties for all expressions*

20./19 (+)	VG Radish: shape of crown shoulder	Racine: forme de la partie supérieure	Rübe: Schulter Kopfform	Raiz: forma de la parte superior		
PQ	(b) flat	aplatie	flach	aplanada	Bamba (S), Saxa 2 (S), Minowase Summer Cross Nr. 3 (D)	1
	rounded	arrondie	abgerundet	redondeada	Flamino (S), Rex (D)	2
	conical	conique	konisch	conica	Pernot (S), Blanche transparent (S) Mantanghong (D)	3

In TG 64 Char 20, it was agreed to delete this char. and to replace by Radish: shape of shoulder, which is more in accordance with the drawing.

RO09 and HU09: agree with "Radish: shape of shoulder"

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
21. VG	Radish: shape of base	Racine : forme de la base	Rübe: Form der Basis	Raiz: forma de la base		
(+)						
PQ	(b) narrow acute	aigue étroite	schmal spitz	aguda angosta	Blanche transparente (S), Minowase Summer Cross Nr. 3 (D)	1
	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
	Flat truncate	plate	eben	plana	À forcer rond écarlate (S), Jumbo Scarlet (D)	5
22/- (*)	VG Radish: Number of colores of skin (without green shoulder)					
QN	one-colored	unicolore	Einfarbig-eins	monocolor	Cerise (S), Saxa 2 (S), JP09: Minowase Summer Cross No. 3 (D)	1
	two-bi-colored	bicolore	Zweifarbig-zwei	bicolor	Flamboyant 2 (S), JP09: Murakizukin (red and white, D), Oshin (green and white, D)	2

Not in TG 63, but applicable in Daikon radish, example varieties?

NL09: No examples for two colored Daikon radishes (apart from green shoulder)

JP09: propose to treat green as main color. Pictures of example varieties can be shown during s 43. session.

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
23.+ VG 24/21. (*)	Radish: color of skin	Racine : couleur de l'épiderme	Rübe: Farbe der Haut	Raiz: color de la epidermis		
PQ	(b) white	blanc	weiß	blanco	Rex (S), JP09: Minowase Summer Cross No. 3 (D), Miura (D)	1
JP09:	yellowish white				JP09: Gold Star (S)	2
	yellow	jaune	gelb	amarillo		3
	brown	brun	braun	marron		3
JP09:	green				Aonaga (D)	
	pink	rose	rosa	rosa	De cinq semaines rose 3 (S)	4
	red	rouge	rot	rojo	JP09: Benizonochunaga (D)	5
	dark pink red		dunkelrosarot		Ostergruß rosa 2 (S)	6
	purple	pourpre	purpurn	purpura	JP09: Karaineaka (D), ES09 Roche	7
	violet	violet	violett	violeta	Hilds blauer Herbst und Winter (S), Violet de Gournay (S)	8
	black	noir	schwarz	negro	Noir gros rond d'hiver (S)	9

Only TG 63. Propose to change name to "Radish: Main color of skin"; Definition of "Main color" => Color of upper part?

NL09: For TG 63 Wording like it is, For TG 64 Wording change to "main color of skin"

JP09: agrees to change name to "Radish:main color of skin". However main color means the largest area of the radish. Proposes to add "green" to the states of expression. "Green" should be treated as main color. Even if there is no yellow example variety of the daikon radish, JP proposes to add "yellowish white". (Pictures of example varieties will be presented on 43. session)

CN09: keep "green", There are white radishes with and without green shoulders and in addition green varieties (light green, yellowish green...).

RO09: agrees to "Radish: Main color of skin"

new VG Radish: colored stripes of skin

QL (b) absent

Minowase Summer Cross No. 3 (D)

present

Akasuji (D)

JP09: Proposal of a new characteristic (Pictures of varieties will be presented on 43. session)

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
25/- VG	<u>Only varieties with two coloured bicolor root: extent of whit tip</u>	<u>Radis bicolores seulement: Racine: extension du bout blanc</u>	<u>Nur Sorten mit zwei Farben: Knolle: Ausdehnung des Weißanteils</u>	<u>Sólo raíces bicolor: Rabanito: extensión del extremo blanco</u>		
QN	very small	très faible	sehr gering	muy pequeña	Demi-long écarlate à très petit blanc 2 (S) JP09: Murasakizukin (D)	1
	small	faible	gering	pequeña	Delikat (S), Flamino (S), JP09 Ohin (D)	3
	medium	moyenne	mittel	media	Fakir (S), Pépito (S), JP09 Aonaga (D)	5
	large	forte	groß	grande	Pernot clair (S), JP09 Benikamm (D)	7
	very large	très forte	sehr groß	muy grande	Rond rose à très grand bout blanc 2 (S), JP09 Benizonochunaga (D)	9

Only TG 64, applicable in Daikon radish. Char. name to be changed?

NL09: not applicable in TG 63

JP: Proposal to change Char. name. The extension of the white tip is observed in relation to the radish. "Only varieties with two coloured radish: relative extension of white tip to length.

RO09: Root or radish?

-/22. VG	<u>White Radish only: Radish: green color of shoulder</u>	<u>Variétés à racine blanche seulement: Racine: couleur verte du collet</u>	<u>Nur Sorten mit weißen Rüben: Rübe: Grünfärbung des Kopfes</u>	<u>Solo variedades de raíz blanca: Raiz: color verde del cuello</u>		
QN	(b) absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Minowase Summer Cross Nr. 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

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
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Only TG 63, applicable in Small radish or are Small radishes always Note 1?

NL09: not applicable in TG 64

JP09: Propose to change Char. name: "Only green colored varieties: radish: Intensity of green color of shoulder"

CN09: Propose to have only the states "absent" and "present"

HU09: Small radishes is usually red so it will not e examined for this characteristic

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

Only TG 63, also applicable in Small radish? White Small radishes only Note 1? Should note 1 be "absent or very weak" PQ?

NL09: not applicable in TG 64

JP09 proposes to change Char. to "Only varieties with anthocyanin colored radish: Intensity of anthocyanin coloration" QN (1,3,5...) [Pictures will be presented on 43. session]

RO09: Proposes "absent or very weak"

ES09: for all varieties, The red obviously is present.

-/24. VG	Radish: ridging of surface	Racine : annelé de la surface	Rübe: Ringelung der Oberfläche	Raiz: anillada de la superficie		
QN (b)	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Minowase Summer Cross Nr. 3 (D)	1
	weak	faible	gering	débil		3
	medium	moyen	mittel	media	Halblanger weißer Sommer (D)	5
	strong	fort	stark	fuerte		7
	very strong	très fort	sehr stark	muy fuerte		9

Only TG 63, also applicable in Small radish? Small radishes only Note 1?

NL09: not applicable in TG 64

HU09: yes, small radish will be always 1

ES09: To replace by "Extent of hairy roots, Scale 1-7 for all varieties"

26/- VG	Radish: thickness of cortex	Racine: épaisseur du cortex	Knolle: Dicke der Rinde	Rabanito: grosor de la corteza		
QN	thin	fin	dünn	delgada	Karissima (S)	3
	medium	moyen	mittel	media	Korund (S)	5
	thick	epais	dick	gruesa	Ilka (S)	7

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
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Only TG 64 Char. 26, also applicable in Daikon radish?

NL09: Could be also applicable in TG 63

RO09: also applicable in Daikon radish

HU09: proposes "Only for Small radish:..."

27/25. VG	Radish: color of the flesh	Racine : couleur de la chair	Rübe: Farbe des Fleisches	Raiz: color de la pulpa		
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), Noir gros long d'hiver de Paris (D), Saxa 2 (S)	2
	green	vert	grün	verde	Green Meat (D)	3
	red	rouge	rot	rojo	Mantanghong (D), Roche (S)	4

JP09: Proposal to change Char. name to "main color of flesh" because of varieties with two colored flesh [Pictures will be presented on 43. session]

ES09: To delete red and green. Both are white with more or less extent overcome colour. Therefore add new Char. Flesh: Intensity of green color (Scale 1-9) and Flesh: green color (Scale 1-3)

28/26. VG (*) (+)	Time of harvest maturity	Epoque de maturité de récolte	Zeitpunkt der Erntereife	Fecha de madurez de cosecha		
QN	very early	tres precoce	sehr früh	muy temprano	Fluo (S), Salto (S)	1
	early	précoce	früh	temprana	Apolo (S), Rota (S), Ostergruß rosa 2 (D)	3
	medium	moyenne	mittel	media	Cerise (S), Rex (D)	5
	late	tardive	spät	tardia	Flamboyant (S), Noir gros rond d'hiver (D)	7

TWV 2007: NL: to delete char . 26

Comment DE 2009: Harvest maturity is a regional-typic, subjective time span, in which the radish reaches a certain size due to consumer habits and therefore may differ between national authorities and even between variety types (big vs. small bunch types). Harvest maturity seems likely an expression of the earliness of a variety.

Instead of using the harvest maturity to fix the time span to reach a certain size, a fixed date could be used to compare the reached size.

Size is also measured in other characters as radish: length or diameter, which is observed at the time when the radish is fully developed but could also be observed at a certain number of days after sowing. .

Therefore I propose to observe (instead of harvest maturity) the earliness of a variety by width of a variety at the time when the earliest variety is fully developed (or after certain number of days after sowing f.e 30 days) see new 28b/26b.

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota
New 28b/26b (* (+)	VG Earliness: Diameter of radish		Frühzeitigkeit: Durchmesser der Rübe			
QN	small					3
	medium					5
	large					7

NL09: disagree with this Char. (details on Annex with NL comments)

ES09: change to “Earliness of enlarging the radish, Scale 1 very early-9 very late. For earliness of size of radish, a fix volume should be stated (for instance 35 cc) as stage to count the time. (35 cc would correspond a diameter of 4 cm, for round types, a diameter of 3 cm for Flamboyant type and for long types a diameter of 2,3 cm). This dimensions are approximate not necessary be exact because the growing is very quick in this size stage

29/27. (+)	VG Radish: tendency to become pithy	Racine : tendance à se creuser	Rübe: Neigung zum Pelzigwerden	Raiz: tendencia a ahuecarse		
PQ (b)	absent or very weak	absente ou faible	fehlend oder sehr gering	ausente o débil	Alttox (S), Carnita (S), Ika (S)	1/1
	weak	faible	gering	débil	Apolo (S), Falco (S), Flambo (S), Parat (S),	3/-
	medium	moyenne	mittel	media	Aviso (S)	5/2
	strong	forte	stark	fuerte	Blanche transparente (S), Cherry Belle (S), Rex (D)	7/3
	very strong	tres forte	sehr stark	muy fuerte	De dix-huit jours (S)	9/-

Different expression and notes in TG 64 and TG 63: QN vs PQ

NL09: Should be QN

RO09: For Small radish types and summer grown types to have the states 1 (absent or weak), 3 (medium) 5(strong) For Daikon radish types to have the notes 1-2-3.

TWV 2007 For Black radish: agreed to have the notes 1-2-3 only

ES09: Explanation ok, change name to “Earliness of pithiness” Scale: 1-Redondo rojo punta blanca 3, 2- Flamboyant, 3-Fanal, 4-Scarlet Champion, 5-Middle East giant, 6-Early 40 days, 7-,8- 9-

S/D	English	français	deutsch	español	Example Varieties/ Exemples Beispielssorten/ Variedades ejemplo	Note/ Nota	
30.-	VG	Development in					
C	short days						
						1/1	
						3/-	
						5/2	
						7/3	
						9/-	

NL09: was not carried over from TG 63

31.	Tendency to bolting					
	absent or very weak				Unicorn, Neptun	1
	weak				Omny, White arrow	3
	medium				Scarlet champion	5
	strong				Early 40 days, Roche, Flamboyant 5	7
	very strong				Mantanghong (D)	9

ES09 proposes to add Tendency to bolting. It is important because certain varieties need to be grown in autumn-winter but others admit more wide time for cultivation.

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

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

- (a) All observations on the 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 when the radish is fully developed (see ad. 26).

Grouping for Small radish and Daikon radish:

Grouping for Small radish and Daikon radish type is based on characteristics:

- new 28b/26b Earliness: Diameter of radish in conjunction with characteristic
- - /15 Radish length

Character new 28b/26b Earliness: Diameter of radish

Varieties applied for Daikon radish with note 1 or 2 should be considered to be grouped to Small radish types if the size of the radish at full development (-/15 Radish length and 19/17 Radish shape) is comparable to very large Small radish types.

Character -/15 Radish length

Varieties applied for Daikon radish with note 1 or could be considered to be grouped to Small radish varieties if Char. new 28b/26b Earliness: Diameter of radish is note 1 or 2.

Varieties applied for Small radish with note 8 or 9 could be considered to be grouped to Small radish varieties if Char. new 28b/26b Earliness: Diameter of radish is note 1 or 2.

NL09: In fact, this is to come to a separation between the two types. It is stated that this should be done based on new characteristic 28b/26b Earliness: diameter of radish and -/15 length. However there are varieties, in either type, which will develop or not depending on the season or day length. In our ring test for example Mantanghong did not develop in spring but started to bolt. On the other hand some small radish types will not develop in winter, but only in summer. This makes the characteristic earliness very difficult to use. The characteristic Radish: length puts a new dimension to our discussion concerning the separation or not.

8.2 *Explanations for individual characteristics*

Ad. 1/1: Ploidy

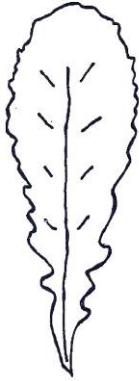
The ploidy status of the plant can be checked by different methods as determination of the number

- 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).

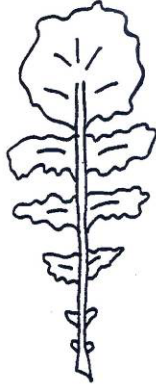
Another efficient method to determine the ploidy status is the flow cytometry.

Ad. 7/7: Leaf blade: shape

Ad. -/10: Leaf blade: lobes (division to midrib)



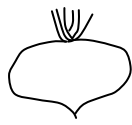
1
absent



9
present

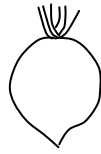
Ad. 19/17: Radish: shape

Will be updated after agreement which states of expression will be necessary for Small and Daikon radish.



1

transverse
elliptic



2

circular



3

elliptic



4

narrow
elliptic



5

obovate



6

rectangular



7

obtriangular



8

narrow
obtriangular



9

iciclical



10

ovate



11

bell
shaped

TWV 2007: NL: to add “transverse broad elliptic” between “transverse elliptic” and “circular”

DE proposal 2008 : If we agree on 17b in combination with 17, we could delete all “broad” or “narrow” expressions of shape and leave just the basic shapes.

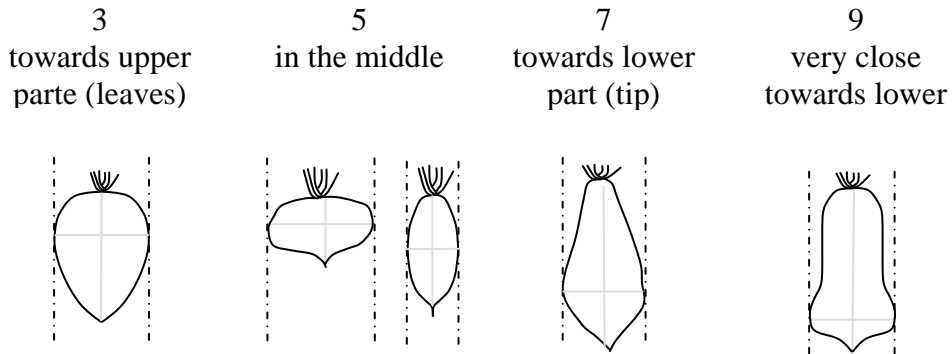
HU09 proposals to the root shape

It is enough 1 rectangular shape not 3 (see Ch.19/17).

We propose to choose only one from the rectangular and the iciclical shape because there is difference between these two shapes only in the length. There is character for the shoulder, base, length, diameter and length/diameter ratio. It is enough to make differences between the rectangular and iciclical shape and to use only one of them.

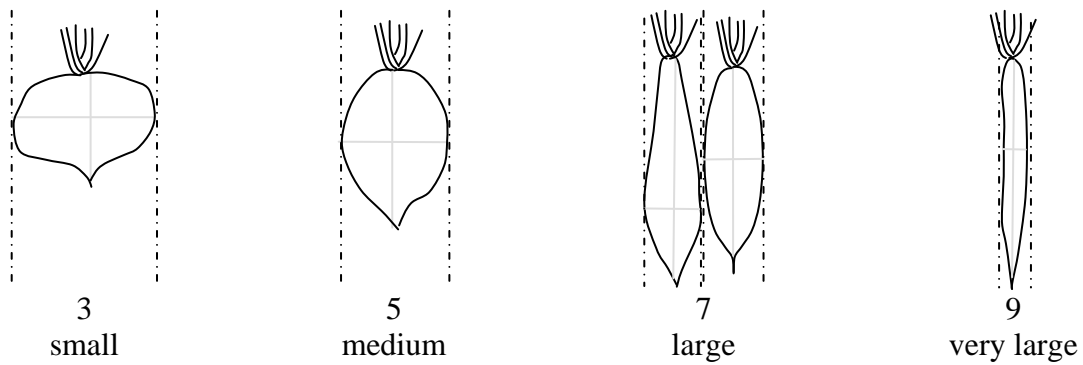
Ad. 17a (new): Radish: position of maximum diameter

Proposal 2008: Instead of 17. Radish: Shape // NL 2008: No replacement of 17

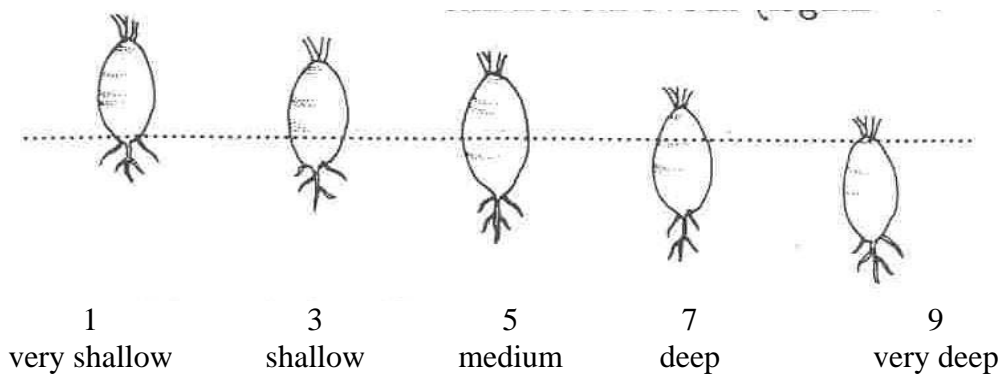


Ad 17b. (new) Radish: length in relation to diameter

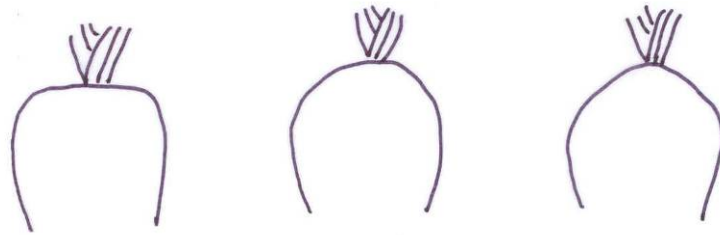
Proposal 2008 Instead of 17. Radish: Shape // 2008 NL: In addition to 17, and to be named "Ratio: length/diameter"



Ad. 18 (new): Radish: position in soil



Ad. 20/19: Radish: shape of crown-shoulder



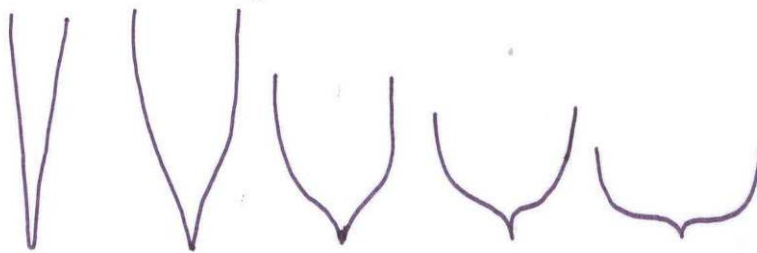
1
flat

2
rounded

3
conical

Ad. 21/20: Radish: shape of base

NL09: the difference between obtuse (3) and rounded (4) is difficult to see



1
narrow
acute

2
acute

3
obtuse

4
rounded

5
truncate

Ad. 28/26: Time of harvest maturity

Due to the different types of black radish it is difficult to fix this characteristic appropriately for all types. (We harvest the plants when the crown is about 6 cm for big radishes and 3 cm for small bunching types).

TWV 2007: Explanation to be improved or characteristic to be deleted

NL: Agree to delete

Comment DE 2009: Harvest maturity is a regional-typic, subjective time span, in which the radish reaches a certain size due to consumer habits and therefore may differ between national authorities and even between variety types (big vs. small bunch types). Harvest maturity is more or less the earliness of a variety.

Instead of using the harvest maturity to fix the time span to reach a certain size, a fixed date could be used to compare the reached size.

Size is also measured in other characters as radish: length or diameter, which was observed at the time when the radish is fully developed but could also be observed at a certain number of days after sowing. .

Therefore I propose to observe the earliness of a variety by the length or width of a variety at a certain number of days.

Ad new 28b/26b Earliness: Diameter of radish

X days after sowing (when earliest Small radish types are fully developed)

HU09: agrees with the text above and propose to keep 28/26 time of harvest maturity. We suggest to increase the number of observed roots from 40 to 60 that means 20 roots will be test to compare the earliness of the varieties. In the same harvest time the early varieties are larger than the late varieties. The time of harvest will be decided by the national authorities.

ES09: change to “Earliness of enlarging the radish, Scale 1 very early-9 very late. For earliness of size of radish, a fix volume should be stated (for instance 35 cc) as stage to count the time. (35 cc would correspond a diameter of 4 cm, for round types, a diameter of 3 cm for Flamboyant type and for long types a diameter of 2,3 cm).This dimensions are approximate not necessary be exact because the growing is very quick in this size stage

Ad. 29/27: Radish: Tendency to become pithy

NL09: difficult to assess, to be discussed. “Late pithiness” is a breeding goal for small radishes. For the Black radishes it is not important. Before they become pithy, they are already harvested and after harvest but still in soil they will be rotten away before they become pithy.

Proposal to count the days after sowing for the expression of pithiness instead of days after harvest maturity, because harvest maturity is differs on the region and is subjective. Nevertheless, the observations can start after the region-typic definition of harvest maturity.

Please consider the following: Two radish varieties (A and B) become pithy at the same time and can not be distinguish by the new defined character. With the old definition (counting days after harvest maturity), they were distinguishable, because variety A is fast growing and early at harvest maturity and therefore also has less tendency to become pithy. Variety B reaches harvest maturity later and therefore the tendency to become pithy is strong. These radishes will be distinguishable by other characteristics, if they are measured before they are fully developed (f.e. X days after sowing) or the earliest variety is fully developed.. They will differ because variety A is growing faster than variety B, even if they have the same length or width at fully development.

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.

DE: We appreciate very much your comments concerning this explanation.

9. Literature

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

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

10. Technical Questionnaire

(to be adapted after agreement on a merged TG)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Application date: (not to be filled in by the applicant)
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TECHNICAL QUESTIONNAIRE
 to be completed in connection with an application for plant breeders' rights

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.

1. Subject of the Technical Questionnaire

1.1.1 Botanical name

1.1.2 Common name

1.2.1 Botanical name

1.2.2 Common name

2. Applicant

Name

Address

Telephone No.

Fax No.

E-mail address

Breeder (if different from applicant)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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3. Proposed denomination and breeder's reference	
Proposed denomination (if available)	<input type="text"/>
Breeder's reference	<input type="text"/>

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

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

- (a) Self-pollination []
- (b) Cross-pollination
 - (i) population []
 - (ii) synthetic variety []
- (c) Hybrid []
- (d) 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:
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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).

NL09: TQ characteristics to be discussed

Characteristics	Example Varieties	Note
5.1 Ploidy (1)		
diploid	Halblanger weißer Sommer	2 []
tetraploid	Rex	4 []
5.2 Seedling: anthocyanin coloration of hypocotyl (2)		
absent	Minowase Summer Cross Nr. 3	1 []
present	Kaiser, Rex	9 []
5.3 Radish: length (15)		
very short	Runder weißer	1 []
short	Noir gros long rond d'hiver	3 []
medium	Gentoku, Neptun,	5 []
long	Ninja, Servatius,	7 []
very long	April Cross, Martina	9 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
Characteristics	Example Varieties	Note	
5.4 Radish: shape (17)			
transverse elliptic	Jumbo Scarlet	1 []	
<i>NL:</i> <u>transverse broad elliptic</u>	<u>Jumbo Scarlet</u>		
circular	Noir gros rond d'hiver	2 []	
elliptic	Sutong	3 []	
narrow elliptic			
obovate	Fridolin weiss	5 []	
rectangular	Neptun, Noir long maraîcher,	6 []	
obtriangular	Oval blanc de Munich	7 []	
narrow obtriangular	Rex	8 []	
iciclical	De cinq semaines rose 3, Minowase Summer Cross Nr. 3	9 []	
ovate		10 []	
bellshaped		11 []	
5.5 Radish: color of skin (21)			
white	Rex	1 []	
yellow		2 []	
brown		3 []	
pink	De cinq semaines rose 3	4 []	
red		5 []	
dark pink red	Ostergruß rosa 2	6 []	
purple		7 []	
violet	Hilds blauer Herbst und Winter, Violet de Gournay,	8 []	
black	Noir gros rond d'hiver	9 []	
green	Green Meat	10 []	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
<i>Example</i>	<i>Radish: color of skin</i>	<i>white</i>	<i>yellow</i>

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [] No []

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes [] No []

(If yes, please provide details)

7.3 Other information

8. Authorization for release

(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?

Yes [] No []

(b) Has such authorization been obtained?

Yes [] No []

If the answer to (b) is yes, please attach a copy of the authorization.

Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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	<input type="text"/>		
Signature	<input type="text"/>	Date	<input type="text"/>

[Annex I follows]

ANNEX I

Comments of the Netherlands

Looking at the papers which are prepared by Germany we come to the conclusion that the two guidelines should stay separated. The considerations for this are the following:

General

As remarked by Spain, in the Compilation of the results per participant the NL 'no result' for Datil Rosa should have been thickened root and hypocotyl and for Sochun also thickened root and hypocotyl. Mantang Hong was bolting in Spring, but in autumn (sowing after the longest day) it showed a thickened root and hypocotyl.

The table shows more or less above the line varieties with mainly the hypocotyl thickened, under the line also the primary root thickened. So this could be the difference between the two types and the reason for having and keeping two guidelines.

Another aspect which maybe lies behind the discussion which we are having is that varieties which are tested according to one guideline in fact should have been tested according to the other one. This is an item to be discussed.

To get it clear along which guideline should be used, the common names (and Latin names) of both guidelines should be completed.

Even if both guidelines are combined into one this exercise should be done.

TG-63-7 and TG-64-7 (proj1)

The combined guideline shows that it is very difficult to have the two types combined in one trial and to use the same characteristics. To make it more complicated, different numbers of plants and a different trial lay out and different cultural measures are needed.

With regard to the explanation in chapter 8.1 for grouping: In fact, this is to come to a separation between the two types. It is stated that this should be done based on new characteristic 28b/26b Earliness: diameter of radish and -/15 length. However there are varieties, in either type, which will develop or not depending on the season or day length. In our ring test for example Mantanghong did not develop in spring but started to bolt. On the other hand some small radish types will not develop in winter, but only in summer. This makes the characteristic earliness very difficult to use. The characteristic Radish: length puts a new dimension to our discussion concerning the separation or not.

Looking to the above we come to the conclusion that the two guidelines should stay separated.

In the separate guidelines the cultivar groups of the Radish respectively Black radish should be mentioned (similar to for example the cabbage guideline) and the cultivar groups from the other type excluded.

- English common names to add to radish: small radish, garden radish, European radish, Chinese small radish, western radish. A Cv. Group could be Small Radish.

ANNEX I, page 2

- English common names for Black radish are also Daikon Radish and Oriental Radish and probably also other common names for Oriental types like Sochun and Mantanghong should be added. Cv. Groups could be Chinese Radish and Black Radish.

[Annex II follows]

ANNEX II

Comments of Spain

First I agree with to draft one common guideline because the division of the species in two crops clearly separated is not possible as majorityly was agreed in the discussion of the results of the ring test in 2008. To find several grouping characteristics to manage the reference collection should be more appropriate.

I think the scales in general can be unique for the whole collection, having in mind that the big quantitative differences inter varieties are when its are measured in very different stages of development of the plants. This problem would be solved measuring or assessing quantitative characteristics in well established times.

So for length and width of the leaf, number of leaves a **common time of observation** should be stated, for instance 45 days from sowing.

For varieties with long cycle, a **second observation** should be made, for instance 90 days from sowing (**only for varieties not pithy and not bolted at this time**).

For earliness of size of radish, a fix volume should be stated (for instance 35 cc) as stage to count the time. (35 cc would correspond a diameter of 4 cm, for round types, a diameter of 3 cm for Flamboyant type and for long types a diameter of 2,3 cm). This dimensions are approximate not necessary be exact because the growing is very quick in this size stage

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.

GROUPING

For grouping the ancient division in two groups: small and black radish must be withdrawn. A more complex grouping should be more practice. For instance some possible groups:

- 1-Red varieties with strong tendency to pithiness and shape approximately round-Ex.-Redondo rojo
- 2-Red varieties with strong tendency to pithiness and shape semi long-(ratio length/width between 2 and >3,5)Ex. Datil rojo
- 3-Red varieties with strong tendency to pithiness and ratio length/width >3,5 elongated-Ex. Candela de fuego
- 4-Red varieties with light to medium tendency to pithiness and shape approximately round-Ex Middle East Giant
- 5- Red and white varieties with strong tendency to pithiness- Ex Flamboyant 3
- 6-White varieties with strong tendency to pithiness and shape approximately round Ex. Runder weisser
- 7-White varieties with light or no tendency to bolting and shape approximately round. Ex-Sweet acre
7. White varieties with light or no tendency to bolting and ratio length/width >3,5 Ex Unicorn
- 8 Varieties with other colours (one group per colour)
9. Varieties with strong anthocyanin coloration in the flesh Ex-Roche

So the characteristics for grouping should be:

- 17b-Radish:Ratio length/diameter
- 22- Radish: Number of colours
- 23- Radish: colour of skin
- 29 Tendency to pithiness
- New Flesh:Intensity of anthocyanin coloration

ANNEX II, page 2

ch.n°	Table of characteristics	scale	Observations
4,00	Number of fully developed leaves (45 days after sowing)	3 to 7	for all the varieties
4b	Number of fully developed leaves (90 days after sowing)	3 to 9	(only for varieties not pithy and not bolted at this time
6,00	Leaf length (45 days after sowing)	3 to 7	for all the varieties
6b	Leaf length (90 days after sowing)	3 to 9	(only for varieties not pithy and not bolted at this time
7,00	Leaf width (45 days after sowing)	3 to 7	for all the varieties
7b	Leaf width (90 days after sowing)	3 to 7	(only for varieties not pithy and not bolted at this time
18,00	Radish:width	1 to 9	only one scale examples to be revised
19,00	To exchange the names obovate and ovate		
17a	OK		
17b	Radish Length in relation to diameter	1 to 9	Examples(2-Leda 3-Fanal 4-Sutong 5-Flamboyant 6-Datil Rosa 7-Unicorn 8-Candela di fuoco
new	Position in soil. For all varieties		Examples
23+24/2 1	Color of skin		Example for purple: Roche
23,00	Anthocyanin coloration		for all the varieties. The red obviously are present
24,00	To replace for extent of hairy roots	1 to 7	for all varieties
27/25	Color of flesh		To delete red and green. Both are white with more or less extent overcome colour
add new	Flesh: intensity of anthocyanin coloration	1 to 9	1-absent 3 weak 5 medium 7 strong 9 very strong
add new	Flesh : green color	1to 3	1-absent 2 weak 3 strong
28b	Earliness of enlarging the radish	1 to 9	1 very early-9 very late. See explanation
29b	Ok explanation, but the name be replaced with "earliness of pithiness"	1 to 9	1-Redondo rojo punta blanca3 2-Flamboyant3 3-Fanal 4-Scarlet Champion 5 Middle East Giant 6 Early 40 days 7,8,9 to send later

[End of Annex II and of document]