



TG/64/6

INTERNATIONAL UNION  
FOR THE PROTECTION  
OF NEW VARIETIES OF  
PLANTS

UNION INTERNATIONALE  
POUR LA PROTECTION  
DES OBTENTIONS  
VÉGÉTALES

INTERNATIONALER  
VERBAND ZUM SCHUTZ  
VON PFLANZEN-  
ZÜCHTUNGEN

UNIÓN INTERNACIONAL  
PARA LA PROTECCIÓN  
DE LAS OBTENCIONES  
VEGETALES

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

**RADISH**

*(Raphanus sativus L.  
var. sativus Pers.)*

**GENEVA**  
**1999**

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## **GUIDELINES**

### **FOR THE CONDUCT OF TESTS**

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#### **RADISH**

***(Raphanus sativus L.  
var. sativus Pers.)***

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

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## I. Subject of these Guidelines

These Test Guidelines apply to all varieties of *Raphanus sativus* L. var. *sativus* Pers.

## II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the seed required for testing the variety is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must make sure that all customs formalities are complied with. The minimum quantity of seed to be supplied by the applicant in one or several samples should be:

100 g.

The seed should at least meet the minimum requirements for germination capacity, moisture content and purity for marketing seed in the country in which the application is made. The germination capacity should be as high as possible.

2. The plant material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

## III. Conduct of Tests

1. The minimum duration of tests should normally be two similar growing periods.

2. The tests should normally be conducted at one place. If any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.

3. The tests should be carried out under conditions ensuring normal growth. The size of the plots should be such that plants or parts of plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the growing period. Each test should include a total of 200 plants which should be divided between two or more replicates. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Additional tests for special purposes may be established.

## IV. Methods and Observations

1. Unless otherwise indicated, all observations determined by measurement, weighting or counting should be made on 40 plants or parts taken from each of 40 plants.

2. For the assessment of uniformity of open-pollinated and hybrid varieties relative uniformity standards should be applied.

3. All observations on the cotyledon should be made when the first two leaves are fully developed.
4. All observations on the leaf should be made on fully developed leaves at harvest maturity.
5. All observations on the radish should be made at start of hollowness.

#### V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.
2. It is recommended that the competent authorities use the following characteristics for grouping varieties:
  - (a) Ploidy (characteristic 1)
  - (b) Radish: shape of base (characteristic 21)
  - (c) Radish: coloration of skin (characteristic 22)
  - (d) Bi-colored radishes only: Radish: extent of white tip (characteristic 25)

#### VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.
2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of the different characteristics.
3. Legend:
  - (\*) Characteristics that should be used on all varieties in every growing period over which the examinations are made and always be included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.
  - (+) See Explanations on the Table of Characteristics in Chapter VIII.

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

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>1. Ploidy (* )</b>	<b>Ploïdie</b>	<b>Ploidie</b>	<b>Ploidía</b>		
diploid	diploïde	diploid	diploide	Amored, Arista	2
tetraploid	tétraploïde	tetraploid	tetraploide	Boy, Simox	4
<b>2. Seedling: antho- cyanin coloration of hypocotyl (* )</b>	<b>Plantule: pigmen- tation anthocyani- que de l'hypocotyle</b>	<b>Keimpflanze: Anthocyanfärbung des Hypokotyls</b>	<b>Plántula: pigmen- tación antociánica del hipocotilo</b>		
absent	absente	fehlend	ausente		1
present	présente	vorhanden	presente	Cerise	9
<b>3. Cotyledon: size</b>	<b>Cotylédon: taille</b>	<b>Keimblatt: Größe</b>	<b>Cotiledón: tamaño</b>		
small	petit	klein	pequeño	Cerise, Saxa 2	3
medium	moyen	mittel	mediano	Korund, Rota	5
large	grand	groß	grande	Boy, Fanal	7
<b>4. Foliage: width of attachment</b>	<b>Feuillage: largeur de l'attache au collet</b>	<b>Laub: Breite des Ansatzes</b>	<b>Follaje: anchura de la inserción al cuello</b>		
narrow	fine	schmal	estrecha	Flamino	3
medium	moyenne	mittel	media	Amored	5
wide	large	breit	ancha	Rond écarlate	7
<b>5. Leaf: attitude (* )</b>	<b>Feuille: port</b>	<b>Blatt: Haltung</b>	<b>Hoja: porte</b>		
erect	dressé	aufrecht	erecto	Clipo, Karissima, Salto	1
semi-erect	demi-dressé	halbaufrecht	semierecto	Balkar, Balored	3
horizontal	horizontal	waagerecht	horizontal	Bel Image, Ronde Witte	5
<b>6. Leaf: length (* )</b>	<b>Feuille: longueur</b>	<b>Blatt: Länge</b>	<b>Hoja: longitud</b>		
short	courte	kurz	corta	Cerise, Saxa 2	3
medium	moyenne	mittel	media	Amored, Novo	5
long	longue	lang	larga	National 2	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>7. Leaf blade: shape</b>	<b>Limbe: forme</b>	<b>Blattspreite: Form</b>	<b>Limbo: forma</b>		
narrow-obovate	obovale étroit	schmal verkehrt eiförmig	oboval estrecho		1
obovate	obovale	verkehrt eiförmig	oboval	Content, Cyros	3
broad-obovate	obovale large	breit verkehrt eiförmig	oboval ancho	Balkar	5
<b>8. Leaf blade: shape of apex</b>	<b>Limbe: forme du sommet</b>	<b>Blattspreite: Form der Spitze</b>	<b>Limbo: forma del ápice</b>		
pointed	pointu	spitz	puntiagudo		1
rounded	arrondi	abgerundet	redondeado	Neckarperle, Sora	2
<b>9. Leaf blade: hue of green color</b>	<b>Limbe: teinte de la couleur verte</b>	<b>Blattspreite: Ton der Grünfarbe</b>	<b>Limbo: tonalidad del color verde</b>		
absent	absente	fehlend	ausente	Saxa 2	1
yellowish	jaunâtre	gelblich	amarillento	Atlas, Serrida, Scarlet Globe	2
greyish	grisâtre	gräulich	grisáceo	Balored, Flair, Polka	3
<b>10. Leaf blade: intensity of green color</b>	<b>Limbe: intensité de la couleur verte</b>	<b>Blattspreite: Intensität der Grünfärbung</b>	<b>Limbo: intensidad del color verde</b>		
light	faible	hell	claro	Flamino, Gaudio	3
medium	moyenne	mittel	medio	Furabella, Helro	5
dark	forte	dunkel	oscuro	Foxyred	7
<b>11. Leaf blade: number (*) of lobes</b>	<b>Limbe: nombre de lobes</b>	<b>Blattspreite: Anzahl Lappen</b>	<b>Limbo: número de lóbulos</b>		
very few	très petit	sehr gering	muy bajo	Saxa 2	1
few	petit	gering	bajo	Frühwunder, Ilka, Nelson	3
medium	moyen	mittel	medio	Cracou, Salto	5
many	grand	groß	alto		7



English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>12. Leaf blade: incisions of margin</b>	<b>Limbe: découpures du bord</b>	<b>Blattspreite: Randeinschnitte</b>	<b>Limbo: incisiones del margen</b>		
absent	absentes	fehlend	ausente		1
present	présentes	vorhanden	presente		9
<b>13. Leaf blade: depth of incisions of margin</b>	<b>Limbe: profondeur des découpures du bord</b>	<b>Blattspreite: Tiefe der Randeinschnitte</b>	<b>Limbo: profundidad de las incisiones del margen</b>		
shallow	faible	flach	superficiales	Apolo, Callisto	3
medium	moyenne	mittel	medias	Cracou	5
deep	forte	tief	profundas		7
<b>14. Leaf blade: pubescence</b>	<b>Limbe: pubescence</b>	<b>Blattspreite: Behaarung</b>	<b>Limbo: pubescencia</b>		
weak	faible	gering	débil	Disco, Flamboyant 2	3
medium	moyenne	mittel	media		5
strong	forte	stark	fuerte	Delongpont, Rond écarlate	7
<b>15. Petiole: anthocyanin coloration (*)</b>	<b>Pétiole: pigmentation anthocyanique</b>	<b>Blattstiel: Anthocyanfärbung</b>	<b>Peciolo: pigmentación antociánica</b>		
absent	absente	fehlend	ausente	Fakir	1
present	présente	vorhanden	presente	Flamboyant 2	9
<b>16. Petiole: intensity of anthocyanin coloration</b>	<b>Pétiole: intensité de la pigmentation anthocyanique</b>	<b>Blattstiel: Stärke der Anthocyanfärbung</b>	<b>Peciolo: intensidad de la pigmentación antociánica</b>		
weak	faible	gering	débil	Flamino, Mirabeau	3
medium	moyenne	mittel	media	Forro	5
strong	forte	stark	fuerte	Pernot	7
<b>17. Radish: thickness</b>	<b>Racine: grosseur</b>	<b>Knolle: Dicke</b>	<b>Rabanito: grosor</b>		
thin	fine	dünn	delgado	Gaudry 2	3
medium	moyenne	mittel	medio		5
thick	grosse	dick	grueso	Rond rose à très grand bout blanc	7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>18. Radish: width of root</b>	<b>Racine: grosseur du pivot</b>	<b>Knolle: Dicke der Wurzel</b>	<b>Rabanito: grosor de la raíz</b>		
thin	fin	dünn	delgada	Clipo	3
medium	moyen	mittel	media	Apolo, Cerise, Flamboyant 2	5
thick	gros	dick	gruesa		7
<b>19. Radish: shape (* (+)</b>	<b>Racine: forme</b>	<b>Knolle: Form</b>	<b>Rabanito: forma</b>		
transverse elliptic	elliptique transverse	quer elliptisch	elíptica transversal	Fakir, Rond rose à très grand bout blanc	1
circular	circulaire	rund	circular	Cerise, Tinto	2
elliptic	elliptique	elliptisch	elíptica		3
obovate	obovale	verkehrt eiförmig	oboval		4
broad rectangular	rectangulaire large	breit rechteckig	rectangular ancha	Delongpont, De Pontoise, Pernot	5
rectangular	rectangulaire	rechteckig	rectangular	Clipo, Fluo, Salto	6
narrow rectangular	rectangulaire étroite	schmal rechteckig	rectangular estrecha	Albion, Apolo	7
narrow obtriangular	obtriangulaire étroite	schmal verkehrt dreieckig	obtriangular estrecha		8
iciclical	en glaçon	eiszapfenförmig	en estalactita	Blanche transparente	9
<b>20. Radish: shape of crown</b>	<b>Racine: forme de la partie supérieure</b>	<b>Knolle: Kopfform</b>	<b>Rabanito: forma de la corona</b>		
concave	concave	konkav	cóncava		1
plane	plane	flach	plana	Ascari, Amored	2
convex	convexe	konvex	convexa	Arista	3

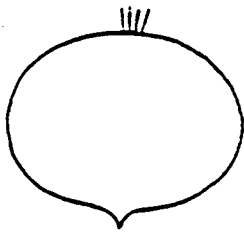
English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>21. Radish: shape of base</b> (* (+)	<b>Racine: forme de la base</b>	<b>Knolle: Form der Basis</b>	<b>Rabanito: forma de la base</b>		
narrow acute	pointue étroite	schmal spitz	puntiaguda estrecha	Blanche transparente	1
acute	pointue	spitz	puntiaguda	Flambo	2
obtuse	obtuse	stumpf	obtusa		3
rounded	arrondie	abgerundet	redondeada	Bamba, Callisto	4
flat	aplatie	flach	plana	À forcer rond écarlate	5
<b>22. Radish: coloration of skin</b> (*	<b>Racine: couleur de l'épiderme</b>	<b>Knolle: Farbe der Haut</b>	<b>Rabanito: color de la epidermis</b>		
one colored	unicolore	einfarbig	monocolor	Balored, Cerise	1
bi-colored	bicolore	zweifarbige	bicolor	Flamboyant 2	2
<b>23. Radish: color of upper part</b> (*	<b>Racine: couleur de la partie supérieure</b>	<b>Knolle: Farbe des oberen Teils</b>	<b>Rabanito: color de la parte superior</b>		
white	blanche	weiß	blanco	Blanche transparente	1
pink	rose	rosa	rosa		2
red	rouge	rot	rojo		3
violet	violette	violett	violeta		4
<b>24. Radish: expression of red color of upper part</b> (*	<b>Racine: expression de la couleur rouge de la partie supérieure</b>	<b>Knolle: Ausprägung der roten Farbe des oberen Teils</b>	<b>Rabanito: expresión del color rojo en la parte superior</b>		
vermilion	vermillon	zinnober	bermellón	Flamino	1
scarlet	écarlate	scharlach	escarlata	Fakir, Rota	2
carmine	carmin	karmin	carmín	Parat	3

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>25. <u>Bi-colored radishes</u> (* only: Radish: extent of white tip</b>	<b><u>Radis bicolores</u> seulement: Racine: extension du bout blanc</b>	<b><u>Nur zweifarbige</u> Radieschen: Knolle: Ausdehnung des Weißanteils</b>	<b><u>Sólo raíces bicolor:</u> Rabanito: extensión del extremo blanco</b>		
very small	très faible	sehr gering	muy pequeña	Demi-long écarlate à très petit bout blanc 2	1
small	faible	gering	pequeña	Delikat, Flamino	3
medium	moyenne	mittel	media	Fakir, Pépito	5
large	forte	groß	grande	Séraphin	7
very large	très forte	sehr groß	muy grande	Rond rose à très grand bout blanc 2	9
<b>26. Radish: thickness of cortex</b>	<b>Racine: épaisseur du cortex</b>	<b>Knolle: Dicke der Rinde</b>	<b>Rabanito: grosor de la corteza</b>		
thin	fin	dünn	delgada	Karissima	3
medium	moyen	mittel	media	Boy, Fanal, Korund	5
thick	épais	dick	gruesa	Ilka	7
<b>27. Radish: color of flesh</b>	<b>Racine: couleur de la chair</b>	<b>Knolle: Fleischfarbe</b>	<b>Rabanito: color de la pulpa</b>		
translucent	blanc vitreux	glasigweiß	traslúcido	Albion	1
opaque	blanc mat	mattweiß	opaco	Hilmar	2
<b>28. Time of harvest (* maturity</b>	<b>Époque de maturité de récolte</b>	<b>Zeitpunkt der Erntereife</b>	<b>Época de madurez para cosecha</b>		
very early	très précoce	sehr früh	muy temprana		1
early	précoce	früh	temprana	Apolo, Rota	3
medium	moyenne	mittel	media	Cerise	5
late	tardive	spät	tardía	Flamboyant 2	7
very late	très tardive	sehr spät	muy tardía		9

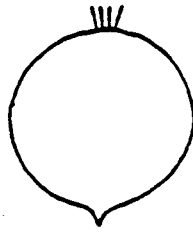
English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>29. Radish: tendency to (* ) become pithy</b>	<b>Racine: tendance à se creuser</b>	<b>Knolle: Neigung zum Pelzigwerden</b>	<b>Rabanito: tendencia a ahuecarse</b>		
absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Alttox, Carnita	1
weak	faible	gering	débil	Apolo, Flambo,Parat	3
medium	moyenne	mittel	media	Aviso	5
strong	forte	stark	fuerte	Boy, Cherry Belle	7
very strong	très forte	sehr stark	muy fuerte		9

VIII. Explanations on the Table of Characteristics

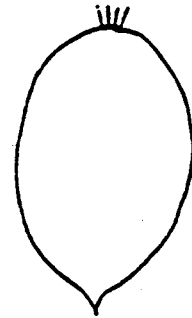
Ad. 19: Radish: shape



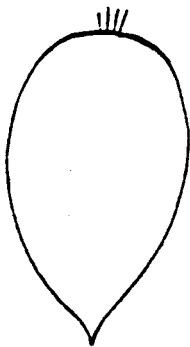
1  
transverse elliptic



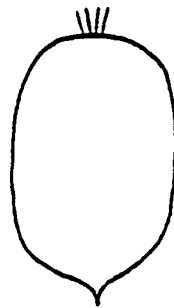
2  
circular



3  
elliptic



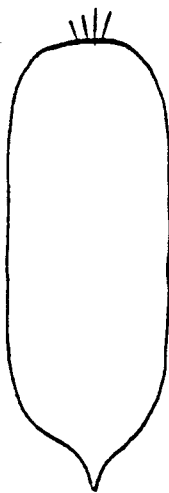
4  
obovate



5  
broad rectangular



6  
rectangular



7  
narrow rectangular



8  
narrow obtriangular



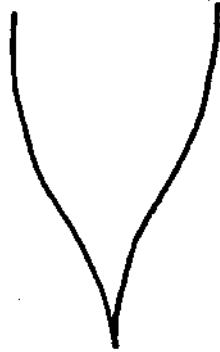
9  
iciclical

Ad. 11: Leaf blade: number of lobes: Parts of the leaf blade are considered as lobes if the cutting is at least half the distance between the margin of the leaf and the mid-rib.

Ad. 21: Radish: shape of base



1  
narrow acute



2  
acute



3  
obtuse



4  
rounded



5  
flat

IX. Literature

No specific literature.

X. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)
<p><b>TECHNICAL QUESTIONNAIRE</b> to be completed in connection with an application for plant breeders' rights</p>	
1. Species	<p style="text-align: center;"><i>Raphanus sativus</i> L. var. <i>sativus</i> Pers.  RADISH</p>
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	



4. Information on origin, maintenance and reproduction of the variety

4.1 Origin and breeding method

- |                             |     |
|-----------------------------|-----|
| (a) Open-pollinated variety | [ ] |
| (b) Single hybrid           | [ ] |
| (c) Three-way hybrid        | [ ] |
| (d) Other (indicate type)   | [ ] |

.....

4.2 Other information

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the state of expression which best corresponds).

Characteristics	Example Varieties	Note
<b>5.1 Ploidy (1)</b>		
diploid	Amored, Arista	2[ ]
tetraploid	Boy, Simox	4[ ]
<b>5.2 Radish: shape (19)</b>		
transverse elliptic	Fakir, Rond rose à très grand bout blanc	1[ ]
circular	Cerise, Tinto	2[ ]
elliptic		3[ ]
obovate		4[ ]
broad rectangular	Delongpont, De Pontoïse, Pernot	5[ ]
rectangular	Clipo, Fluo, Salto	6[ ]
narrow rectangular	Albion, Apolo	7[ ]
narrow obtriangular		8[ ]
iciclical	Blanche transparente	9[ ]
<b>5.3 Radish: coloration of skin (22)</b>		
one colored	Cerise, Balored	1[ ]
bi-colored	Flamboyant 2	2[ ]
<b>5.4 Radish: color of upper part (23)</b>		
white	Blanche transparente	1[ ]
pink		2[ ]
red		3[ ]
violet		4[ ]



7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

7.2.1 Use:

- in glasshouse
- in the open: spring
- summer
- autumn
- winter

7.2.2 Other conditions

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 that question is yes, please attach a copy of such an authorization.

[End of document]