



TG/63/6

E

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**

**BLACK RADDISH**

*(Raphanus sativus L.  
var. niger (Mill.) S. Kerner)*

**GENEVA**  
**1999**

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## **GUIDELINES**

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

#### **FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

#### **BLACK RADISH**

***(Raphanus sativus L.  
var. niger (Mill.) S. Kerner)***

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. *niger* (Mill.) S. Kerner.

## 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:

50 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 60 plants in the glasshouse or 90 plants in the open 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) Blade: lobes (division to midrib) (characteristic 11)
  - (b) Ploidy (characteristic 1)
  - (c) Leaf Radish: shape (characteristic 18)
  - (d) Radish: color of skin (characteristic 21)

#### 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 expression for each characteristic.
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>Ploidie</b>	<b>Ploidie</b>	<b>Ploidía</b>		
diploid	diploïde	diploid	diploide	Unus Treib	2
tetraploid	tétraploïde	tetraploid	tetraploide	Rex	4
<b>2. Seedling: (* ) anthocyanin coloration of hypocotyl</b>	<b>Plantule: pigmentation anthocyanique de l'hypocotyle</b>	<b>Keimpflanze: Anthocyanfärbung des Hypokotyls</b>	<b>Plántula: pigmentación antociánica del hipocotilo</b>		
absent	absente	fehlend	ausente	Minowase Summer Cross Nr. 3	1
present	présente	vorhanden	presente	Kaiser	9
<b>3. Cotyledon: shape (+ )</b>	<b>Cotylédon: forme</b>	<b>Keimblatt: Form</b>	<b>Cotiledón: forma</b>		
heart-shaped	en forme de cœur	herzförmig	acorazonada	Münchner Bier	1
broad heart-shaped	en forme de cœur large	breit herzförmig	acorazonada ancha	Kaiser	2
<b>4. Cotyledon: size</b>	<b>Cotylédon: taille</b>	<b>Keimblatt: Größe</b>	<b>Cotiledón: tamaño</b>		
small	petit	klein	pequeño		3
medium	moyen	mittel	medio	Servatius	5
large	grand	groß	grande	Unus Treib	7
<b>5. Foliage: number of fully developed leaves</b>	<b>Feuillage: nombre de feuilles à complet développement</b>	<b>Laub: Anzahl der ausgewachsenen Blätter</b>	<b>Follaje: número de hojas completamente desarrolladas</b>		
few	petit	gering	bajo	Rex	3
medium	moyen	mittel	medio		5
many	grand	groß	alto		7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>6. Leaf: attitude (* )</b>	<b>Feuille: port</b>	<b>Blatt: Haltung</b>	<b>Hoja: porte</b>		
erect	dressé	aufrecht	erecto	Rex	1
semi-erect	demi-dressé	halbaufrecht	semierecto	Unus Treib	3
horizontal	horizontal	waagrecht	horizontal	Minowase Summer Cross Nr. 3	5
<b>7. Leaf: length (* )</b>	<b>Feuille: longueur</b>	<b>Blatt: Länge</b>	<b>Hoja: longitud</b>		
short	courte	kurz	corta		3
medium	moyenne	mittel	media	Noir long maraîcher, Rex	5
long	longue	lang	larga	Noir gros rond d'hiver, Ovale blanc de Munich	7
<b>8. Leaf blade: shape</b>	<b>Limbe: forme</b>	<b>Blattspreite: Form</b>	<b>Limbo: forma</b>		
narrow-obovate	obovale étroit	schmal verkehrt eiförmig	oboval estrecha	Florian	1
obovate	obovale	verkehrt eiförmig	oboval		2
broad obovate	obovale large	breit verkehrt eiförmig	oboval ancha	Mantanghong	3
<b>9. Leaf blade: hue of green color</b>	<b>Limbe: teinte de la couleur verte</b>	<b>Blattspreite: Ton der grünen Farbe</b>	<b>Limbo: matiz del color verde</b>		
absent	absente	fehlend	ausente	Minowase Summer Cross Nr. 3	3
yellowish	jaunâtre	gelblich	amarillento	Rex	5
greyish	grisâtre	gräulich	grisáceo	Silverstar	7
<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	claire	hell	claro	Kaiser	3
medium	moyenne	mittel	medio	Mino early	5
dark	foncée	dunkel	oscuro	Houseking	7



English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>11. Leaf blade: lobes</b> (* (+) (division to midrib)	<b>Limbe: lobes</b> (division atteignant la nervure principale)	<b>Blattspreite:</b> <b>Lappung (Teilung bis zur Mittelrippe)</b>	<b>Limbo: lóbulos</b> (división hasta el nervio principal)		
absent	absents	fehlend	ausente	Rex, Wiela	1
present	présents	vorhanden	presente	Unus Treib	9
<b>12. Leaf blade: number of lobes (as for 11)</b> (* (+)	<b>Limbe: nombre de lobes (comme pour 11)</b>	<b>Blattspreite: Anzahl Lappen (wie unter 11)</b>	<b>Limbo: número de lóbulos (como para 11)</b>		
very few	très petit	sehr gering	muy bajo	Ostergruß rosa 2	1
few	petit	gering	bajo	Unus Treib	3
medium	moyen	mittel	medio	De cinq semaines rose 3	5
many	grand	groß	alto	Noir long maraîcher	7
very many	très grand	sehr groß	muy alto	Mikura Cross	9
<b>13. Leaf blade: size of terminal lobe</b>	<b>Limbe: taille du lobe terminal</b>	<b>Blattspreite: Größe des Endlappens</b>	<b>Limbo: tamaño del lóbulo terminal</b>		
small	petit	klein	pequeño	Omny, Silverstar	3
medium	moyen	mittel	medio	Rose d'hiver de Chine, Unus Treib	5
large	grand	groß	grande		7
<b>14. 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 borde</b>		
shallow	peu profondes	flach	poco profundas	Unus Treib	3
medium	moyennes	mittel	medias		5
deep	profondes	tief	profundas		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	Noir gros rond d'hiver, Omny	1
present	présente	vorhanden	presente	Rose d'hiver de Chine, Violet de Gournay	9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>16. Radish: length</b> (* (*)	<b>Racine: longueur</b>	<b>Rübe: Länge</b>	<b>Raíz: longitud</b>		
very short	très courte	sehr kurz	muy corta	Runder weißer	1
short	courte	kurz	corta	Jaune d'or oval	3
medium	moyenne	mittel	media	Noir gros long d'hiver	5
long	longue	lang	larga		7
very long	très longue	sehr lang	muy larga		9
<b>17. Radish: thickness</b>	<b>Racine: épaisseur</b>	<b>Rübe: Dicke</b>	<b>Raíz: espesor</b>		
thin	mince	dünn	delgada	Ostergruß rosa 2	3
medium	moyenne	mittel	media	Rex	5
thick	épaisse	dick	gruesa	Noir gros rond d'hiver	7
<b>18. Radish: shape</b> (* (*) (+)	<b>Racine: forme</b>	<b>Rübe: Form</b>	<b>Raíz: forma</b>		
transverse elliptic	elliptique transverse	quer elliptisch	elíptica transversal	Jumbo Scarlet	1
circular	ronde	rund	circular	Noir gros rond d'hiver	2
elliptic	elliptique	elliptisch	elíptica		3
narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha	Langer schwarzer Winter	4
obovate	obovale	verkehrt eiförmig	oboval	Münchner Bier, Jaune d'or ovale	5
rectangular	rectangulaire	rechteckig	rectangular	Noir long maraîcher, Tsukushi Spring Cross,	6
obtriangular	obtriangulaire	verkehrt dreieckig	obtriangular	Oval blanc de Munich	7
narrow obtriangular	obtriangulaire étroite	schmal verkehrt dreieckig	obtriangular estrecha	Rex	8
iciclical	en glaçon	eiszapfenförmig	en estalagmita	De cinq semaines rose 3, Minowase Summer Cross Nr. 3	9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>19. Radish: shape of (+) crown</b>	<b>Racine: forme de la partie supérieure</b>	<b>Rübe: Kopfform</b>	<b>Raíz: forma de la parte superior</b>		
flat	aplatie	flach	aplanada	Minowase Summer Cross Nr. 3	1
rounded	arrondie	abgerundet	redondeada	Rex	2
conical	conique	konisch	cónica		3
<b>20. Radish: shape of (+) base</b>	<b>Racine: forme de la base</b>	<b>Rübe: Form der Basis</b>	<b>Raíz: forma de la base</b>		
narrow acute	aiguë étroite	schmal spitz	aguda angosta	Minowase Summer Cross Nr. 3	1
acute	aiguë	spitz	aguda	Münchner Bier	2
obtuse	obtuse	stumpf	obtusa	Tsukushi Spring Cross	3
rounded	arrondie	abgerundet	redondeada	Noir gros rond d'hiver	4
flat	plate	eben	plana	Jumbo Scarlet	5
<b>21. Radish: color of (*) skin</b>	<b>Racine: couleur de l'épiderme</b>	<b>Rübe: Farbe der Haut</b>	<b>Raíz: color de la epidermis</b>		
white	blanc	weiß	blanco	Rex	1
yellow	jaune	gelb	amarillo	Jaune d'or ovale	2
brown	brun	braun	marrón	Fridolin braun	3
pink	rose	rosa	rosa	De cinq semaines rose 3	4
red	rouge	rot	rojo	Belrosa	5
carmine	carmin	karmin	carmín	Ostergruß rosa 2	6
purple	pourpre	purpurn	púrpura		7
violet	violet	violett	violeta	Violet de Gournay	8
black	noir	schwarz	negro	Noir gros rond d'hiver	9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>22. <u>White radish varieties only:</u> Radish: green color of shoulder</b>	<b><u>Variétés à racine blanche seulement:</u> Racine: couleur verte du collet</b>	<b><u>Nur weiße Rettichsorten:</u> Rübe: Grünfärbung des Kopfes</b>	<b><u>Sólo variedades de raíz blanca:</u> Raíz: color verde del cuello</b>		
absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Minowase Summer Cross Nr. 3	1
weak	faible	gering	débil		3
medium	moyenne	mittel	medio	Tsukushi Spring Cross	5
strong	forte	stark	fuerte	Münchner Bier	7
very strong	très forte	sehr stark	muy fuerte		9
<b>23. <u>White radish varieties only:</u> Radish: anthocyanin coloration</b>	<b><u>Variétés à racine blanche seulement:</u> Racine: pigmentation anthocyanique</b>	<b><u>Nur weiße Rettichsorten:</u> Rübe: Anthocyanfärbung</b>	<b><u>Sólo variedades de raíz blanca:</u> Raíz: pigmentación antocianica</b>		
absent	absente	fehlend	ausente	Rex	1
present	présente	vorhanden	presente	Neckarruhm weiß	9
<b>24. Radish: ridging of surface</b>	<b>Racine: annelé de la surface</b>	<b>Rübe: Ringelung der Oberfläche</b>	<b>Raíz: anillado de la superficie</b>		
absent or very weak	absent ou très faible	fehlend oder sehr gering	ausente o muy débil	Minowase Summer Cross Nr. 3	1
weak	faible	gering	débil		3
medium	moyen	mittel	media	Unus Treib	5
strong	fort	stark	fuerte	Münchner Bier	7
very strong	très fort	sehr stark	muy fuerte		9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>25. Radish: color of the flesh</b>	<b>Racine: couleur de la chair</b>	<b>Rübe: Farbe des Fleisches</b>	<b>Raíz: color de la pulpa</b>		
translucent white	blanc vitreux	glasigweiß	blanco traslúcido	Minowase Summer Cross Nr. 3	1
opaque white	blanc mat	mattweiß	blanco opaco	Noir gros long d'hiver de Paris	2
green	vert	grün	verde	Green Meat	3
red	rouge	rot	rojo	Mantanghong	4
<b>26. Time of harvest (*) maturity</b>	<b>Époque de maturité de récolte</b>	<b>Zeitpunkt der Erntereife</b>	<b>Fecha de madurez de cosecha</b>		
early	précoce	früh	temprana	Rex	3
medium	moyenne	mittel	media		5
late	tardive	spät	tardía		7
<b>27. Radish: tendency to become pithy (*)</b>	<b>Racine: tendance à se creuser</b>	<b>Rübe: Neigung zum Pelzigwerden</b>	<b>Raíz: tendencia a ahuecarse</b>		
absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	South Pole, Runder schwarzer	1
weak	faible	gering	débil		3
medium	moyenne	mittel	media	Unus Treib	5
strong	forte	stark	fuerte		7
very strong	très forte	sehr stark	muy fuerte		9

VIII. Explanations on the Table of Characteristics

Ad. 3: Cotyledon: shape

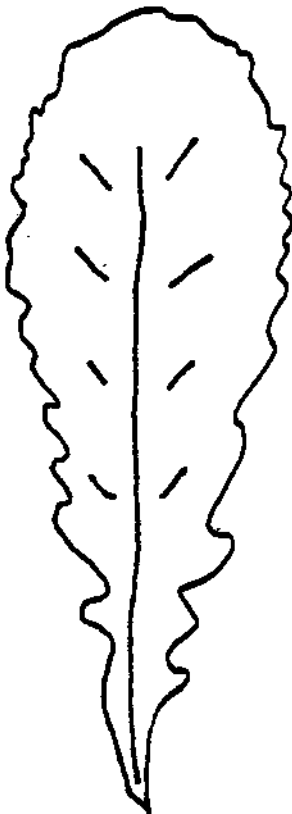


1  
heart-shaped

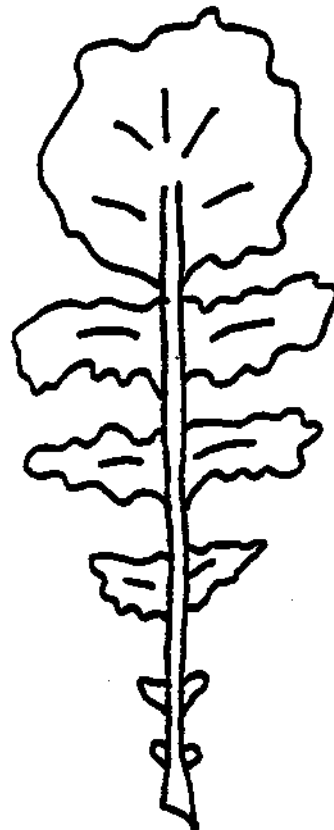


2  
broad heart-shaped

Ad. 11: Leaf blade: lobes (division to midrib)



1  
absent

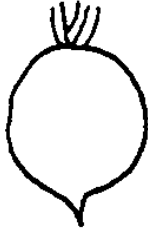


9  
present

Ad. 18: Radish: shape



1  
transverse elliptic



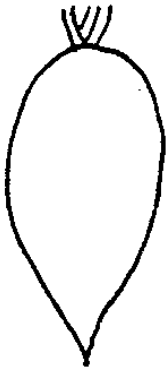
2  
circular



3  
elliptic



4  
narrow elliptic



5  
obovate



6  
rectangular



7  
obtriangular

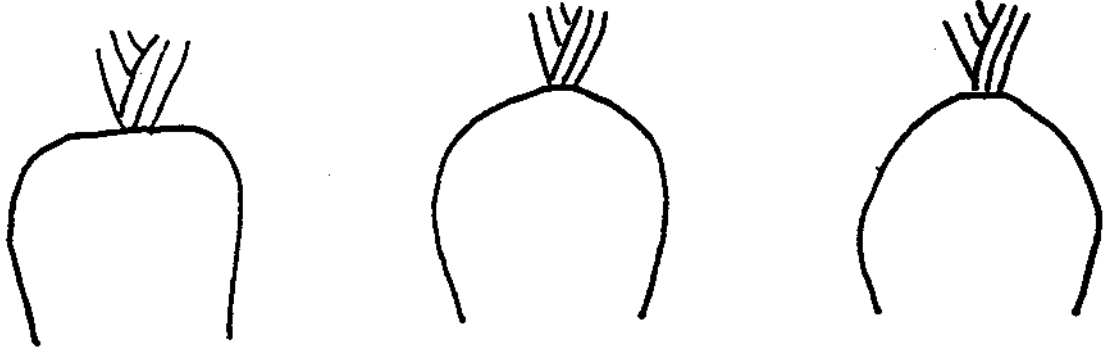


8  
narrow obtriangular



9  
iciclical

Ad. 19: Radish: shape of crown

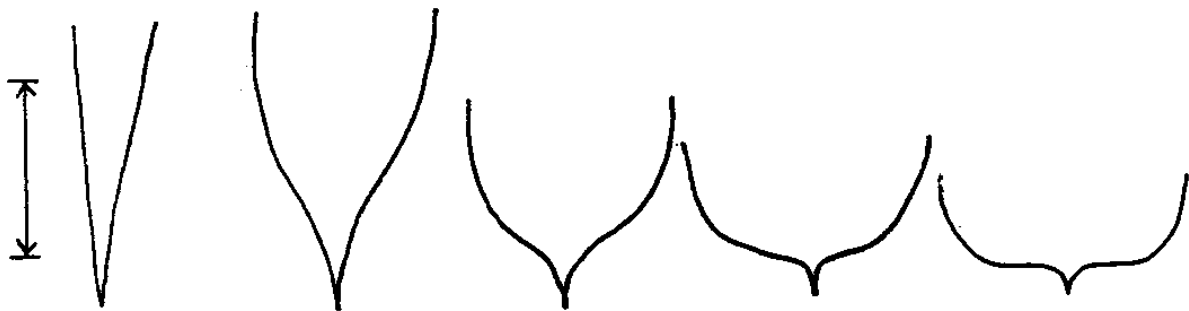


1  
flat

2  
rounded

3  
conical

Ad. 20: 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><i>Raphanus sativus</i> L. var. <i>niger</i> (Mill.) S. Kerner</p> <p><b>BLACK RADISH</b></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 Method of maintenance and reproduction

(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</b> (1)		
diploid	Unus Treib	2[ ]
tetraploid	Rex	4[ ]
<b>5.2 Seedling: anthocyanin coloration of hypocotyl</b> (2)		
absent	Minowase Summer Cross Nr. 3	1[ ]
present	Kaiser	9[ ]
<b>5.3 Radish: length</b> (16)		
very short	Runder weißer	1[ ]
short	Jaune d'or oval	3[ ]
medium	Noir gros long d'hiver	5[ ]
long		7[ ]
very long		9[ ]
<b>5.4 Radish: shape</b> (18)		
transverse elliptic	Jumbo Scarlet	1[ ]
circular	Noir gros rond d'hiver	2[ ]
elliptic		3[ ]
narrow elliptic	Langer schwarzer Winter	4[ ]
obovate	Jaune d'or ovale, Münchner Bier	5[ ]
rectangular	Noir long maraîcher, Tsukushi Spring Cross	6[ ]
obtriangular	Oval blanc de Munich	7[ ]
narrow obtriangular	Rex	8[ ]
iciclical	De cinq semaines rose 3, Minowase Summer Cross Nr. 3	9[ ]

Characteristics	Example Varieties	Note
<b>5.5 Radish: color of skin</b> <b>(21)</b>		
white	Rex	1[ ]
yellow	Jaune d'or ovale	2[ ]
brown	Fridolin braun	3[ ]
pink	De cinq semaines rose 3	4[ ]
red	Belrosa	5[ ]
carmine	Ostergruß rosa 2	6[ ]
purple		7[ ]
violet	Violet de Gournay	8[ ]
black	Noir gros rond d'hiver	9[ ]

6. Similar varieties and differences between these varieties

Denomination of similar variety	Characteristic in which the similar variety is different <sup>0)</sup>	State of expression of similar variety	State of expression of candidate variety

<sup>0)</sup> In the case of identical states of expressions of both varieties, please indicate the size of the difference.

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]