



TG/185/3

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

TURNIP RAPE

*(Brassicarapa L. var.
silvestris (Lam.) Briggs.)*

GENEVA
2002

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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 *Brassica rapa* L. var. *silvestris* (Lam.) Briggs. excluding varieties with swollen root.

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 ensure that all customs formalities are complied with. The minimum quantity of seed to be supplied by the applicant should be:

300g.

In the case of hybrids and synthetic varieties a minimum of 100g seed per component should also be supplied. The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should be stated by the applicant.

2. 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 independent growing cycles.

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 satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination. The distance between rows and between plants within the rows should be adjusted to enable observations on individual plants. The size of the plots should be such that plants or parts of the 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. Each test should be designed to result in a total of at least 300 plants, which should be divided between two or more replicates. Separate plots for observation and for measurements should 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 on individual plants should be made on 60 plants or parts of each of the 60 plants.
2. All observations on a group of plants or parts of plants should be made on each plot as a whole.
3. For the assessment of uniformity of measured characteristics of any type of variety, the variability within the variety should not exceed the variability of comparable varieties already known. Interpretation of results should be made according to the rules for cross-pollinated species as laid down in the General Introduction.
4. For the assessment of uniformity on visually observed characteristics of parental lines a population standard of 2% with an acceptance probability of at least 95% should be applied. For the assessment of uniformity on visually observed characteristics of hybrid varieties a population standard of 10% with an acceptance probability of at least 95% should be applied.
5. Unless otherwise indicated, all observations on the foliage should be made on fully developed leaves in the rosette.
6. Unless otherwise indicated, all observations on siliques should be made on the fully developed siliqua from the lower third on the main stem.

V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. Characters which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within the 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 2)
 - (b) Leaf: type (characteristic 8)
 - (c) Time of flowering (50% of plants with at least one open flower) (characteristic 16)

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. For certain characteristics, different examples

varieties, separated by a semicolon, are indicated for spring turnip rape and winter turnip rape. Where winter varieties are indicated they follow the semicolon.

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.
- 1) The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column. The stages of development denoted by each number are described at the end of Chapter VIII.

Type of assessment:

MG: 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

C: special test

VII. Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tablades caracteres

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. 00 C (+)	Seed:erucic acid	Graine:acide érucique	Samen:Erucasäure	Semilla:ácido erúxico		
	absent	absent	fehlend	ausente	-;Rex	1
	present	présent	vorhanden	presente	Nokonova;Perko PVH	9
2. 00 (* MS)	Ploidy	Ploïdie	Ploidie	Ploidía		
	diploid	diploïde	diploid	diploide	Nokonova;Rex	2
	tetraploid	tétraploïde	tetraploid	tetraploide	-;PerkoPVH	4
3. 13 MS (+)	Cotyledon: length	Cotylédon: longueur	Keimblatt: Länge	Cotiledón:longitud		
	short	court	kurz	corto		3
	medium	moyen	mittel	medio	-;Rex	5
	long	long	lang	largo	-;PerkoPVH	7
4. 13 MS (+)	Cotyledon:width	Cotylédon:largeur	Keimblatt:Breite	Cotiledón:anchura		
	narrow	étroit	schmal	estrecho		3
	medium	moyen	mittel	medio		5
	broad	large	breit	ancho	-;PerkoPVH	7
5. 23-27 VG	Leaf:attitude	Feuille:port	Blatt:Stellung	Hoja:porte		
	erect	dressé	aufrecht	erecto	Hysyn100; -	1
	semi-erect	demi dressé	halbaufrecht	semierecto	Tobin; -	3
	horizontal	horizontal	waagrecht	horizontal	Clan; -	5

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6. 23-27 VG (+)	Leaf:reflexionof top	Feuille: enroulementdu sommet	Blatt:Rollender Spitze	Hoja:curvaturade lapunta		
	weak	faible	gering	débil	Tobin; -	3
	medium	moyen	mittel	media	Skye; -	5
	strong	fort	stark	fuerte	Fortuna; -	7
7. 23-27 (*) VG	Leaf:intensityof greencolor	Feuille:intensité delacouleurverte	Blatt:Intensitätder Grünfärbung	Hoja:intensidadel colorverde		
	light	claire	hell	claro	Clan; -	3
	medium	moyenne	mittel	medio	Tuli; -	5
	dark	foncée	dunkel	oscuro	Agena; -	7
8. 23-27 (*) VS (+)	Leaf:type	Feuille:type	Blatt:Typ	Hoja:tipo		
	entire	entière	ganzrandig	entera	-;Chicon	1
	lobed	lobée	gelappt	lobulada	Kova;PerkoPVH	2
9. 23-27 MS (+)	<u>Forvarietieswith lobedleavesonly:</u> Leaf:num berof lobes	<u>Uniquement variétésàfeuilles lobées:</u>Feuille: nombredelobes	<u>NurfürSortenmit gelapptenBlättern:</u> Blatt:Anzahl Lappen	<u>Sólopara variedadesdehoja lobulada:</u> Hoja: númerodelóbulos		
	few	faible	gering	bajo	Mull; -	3
	medium	moyen	mittel	medio	Skye; -	5
	many	élevé	groß	alto	Hymac; -	7
10. 23-27 VS	Leaf:undulation ofmargin	Feuille:ondulation dubord	Blatt:Randwellung	Hoja:ondulación delborde		
	weak	faible	gering	débil	Tobin; -	3
	medium	moyenne	mittel	media	Kova; -	5
	strong	forte	stark	fuerte	Harmoni; -	7

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	deutsch	español	ExampleVarieties Exemples Beispielssorten Variedadesejemplo	Note/ Nota
11. 23-27 VS (+)	Leaf:dentationof margin	Feuille:denturedu bord	Blatt:Randzählung	Hoja:incisionesen elborde		
	weak	faible	gering	débiles		3
	medium	moyenne	mittel	medias		5
	strong	forte	stark	fuertes		7
12. 23-27 (*) MS (+)	Leaf:length (bladeand petiole)	Feuille:longueur (limbeetpétiole)	Blatt:Länge (Blattspreiteund Blattstiel)	Hoja:longitud (limboypeciolo)		
	short	courte	kurz	corta	Kulta	3
	medium	moyenne	mittel	media	Harmoni	5
	long	longue	lang	larga		7
13. 23-27 MS (+)	Leaf:width (widestpoint)	Feuille:largeur (aupointleplus large)	Blatt:Breite(ander breitestenStelle)	Hoja:anchura (puntoomásancho)		
	narrow	étroite	schmal	estrecha	Kulta	3
	medium	moyenne	mittel	media	Kova	5
	broad	large	breit	ancha		7
14. 61-62 (*) VG	Tendencytoform inflorescencesin theyearof sowing;winter typesinspring sowntrials	Tendanceàformer desinflorescences l'annéedusemis; variétés hivernales danslesessais semésau printemps	NeigungzurBildung vonBlütenständen imAussaatjahr; Wintertypenbei Frühjahraussaat	Tendenciaaformar inflorescenciasel añodelasiembra; variedadesde inviernoenlos ensayos sembrados enprimavera		
	weak	faible	gering	débil	-;Triton	3
	medium	moyenne	mittel	media	-;Rex	5
	strong	forte	stark	fuerte	-;Primax	7

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades de ejemplo	Note/ Nota
15. 61-62 VG	Tendency to form inflorescences in the year of sowing; spring types in late summer sown trials	Tendance à former des inflorescences l'année de semis; variétés printanières dans les essais semés tard en été	Neigung zur Bildung von Blütenständen im Aussaatjahr; Sommertypen bei Spätsommer aussaat	Tendencia a formar inflorescencias el año de la siembra; variedades de primavera en los ensayos sembrados al final del verano		
	weak	faible	gering	débil	Asko;	3
	medium	moyenne	mittel	media	Nokonova;	5
	strong	forte	stark	fuerte	Hymac;	7
16. 61-62 (*) MG	Time of flowering (50% of plants with at least one open flower)	Époque de floraison (50% des plantes avec au moins une fleur épanouie)	Zeitpunkt der Blüte (50% der Pflanzen mit wenigstens einer geöffneten Blüte)	Época de floración (50% de las plantas con al menos una flor abierta)		
	very early	très précoce	sehr früh	muy temprana	Hymac; Primax	1
	early	précoce	früh	temprana	Agena;	3
	medium	moyenne	mittel	media	Kova; Rex	5
	late	tardive	spät	tardía	Munro;	7
	very late	très tardive	sehr spät	muy tardía	Nokonova; Triton	9
17. 62-63 (*) VG	Flower: color of petal	Fleur: couleur des pétales	Blüte: Farbe des Blütenblatts	Flor: color de los pétalos		
	lemon yellow	jaune-citron	zitronengelb	amarillo limón	Kulta; PerkoPVH	1
	orange yellow	jaune-orange	orange gelb	amarillo anaranjado		2
18. 62-63 MS	Flower: length of petal	Fleur: longueur des pétales	Blatt: Länge des Blütenblatts	Flor: longitud de los pétalos		
	short	courts	kurz	cortos		3
	medium	moyens	mittel	medios	Kulta	5
	long	longs	lang	largos		7
19. 62-63 MS	Flower: width of petal	Fleur: largeur des pétales	Blatt: Breite des Blütenblatts	Flor: anchura de los pétalos		
	narrow	étroits	schmal	estrechos		3
	medium	moyens	mittel	medios	Kulta	5
	broad	larges	breit	anchos		7

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20. 62-63 (* VS)	Flower: production of pollen	Fleur: production de pollen	Blüte: Pollenbildung	Flor: producción de polen		
	absent	absente	fehlend	ausente	MDA1803	1
	present	présente	vorhanden	presente	Kova	9
21. 75-89 (* MS)	Plant: total length including side branches	Plante: longueur totale, branches latérales incluses	Pflanze: Gesamtlänge, einschließlich der Seitenzweige	Planta: longitud total incluídos los tallos laterales		
	short	courte	kurz	corta		3
	medium	moyenne	mittel	media	Kulta	5
	long	longue	lang	larga	Harmoni	7
22. 75-89 MS (+)	Siliqua: length (between pedicel and beak)	Silique: longueur (entre pédicelle et bec)	Schote: Länge (zwischen Stiel und Spitze)	Silicua: longitud (entre el pedicelo y el rostro)		
	short	courte	kurz	corta		3
	medium	moyenne	mittel	media	Kulta	5
	long	longue	lang	larga	Harmoni	7
23. 75-89 MS (+)	Siliqua: width (widest point)	Silique: largeur (au point le plus large)	Schote: Breite (an der breitesten Stelle)	Silicua: anchura (en su punto más ancho)		
	narrow	étroite	schmal	estrecha		3
	medium	moyenne	mittel	media		5
	broad	large	breit	ancha		7
24. 75-89 (* MS (+))	Siliqua: length of beak	Silique: longueur du bec	Schote: Länge der Spitze	Silicua: longitud del rostro		
	short	court	kurz	corto		3
	medium	moyen	mittel	medio	Kulta	5
	long	long	lang	largo		7

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
25. 75-89 MS (+)	Siliqua: length of pedicel	Silique: longueur du pédoncule	Schote: Länge des Stiels	Silicua: longitud del pedicelo		
	short	court	kurz	corto	MDA1803;	3
	medium	moyen	mittel	medio	Kulta;	5
	long	long	lang	largo	Noko;	7
26. 00 VS (+)	Seed: frequency of seeds with yellow coloration present	Graine: fréquence de grains qui ont une coloration jaune	Samen: Häufigkeit von Samen mit vorhandener Gelbfärbung	Semilla: frecuencia de semillas con presencia de pigmentación amarilla		
	nil or very low	nulle ou très faible	fehlend oder sehr gering	nula o muy baja		1
	low	faible	gering	baja		3
	medium	moyenne	mittel	media	Corlee;	5
	high	élevée	hoch	alta	Monsun; Triton	7
	very high	très élevée	sehr hoch	muy alta	Parkland;	9

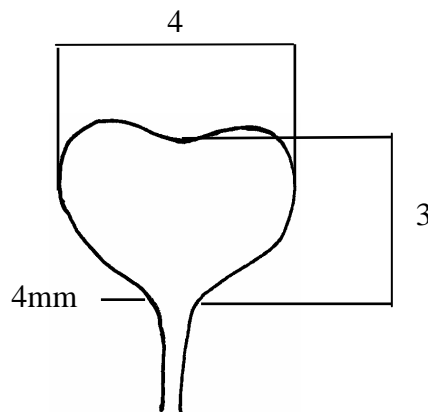
VIII. ExplanationsontheTableofCharacteristics

Ad.1:Seed: erucic acid

The erucic acid content should be observed on seed provided by the applicant. It should be expressed as a percentage by mass of methyl esters in accordance with the ISO standard in document 5508, paragraph 6.2.2.1. Seed contain ing 2% or less of erucic acid will be classifiedas“absent”.

Ad. 3 + 4:Cotyledon: length (3) and width (4)

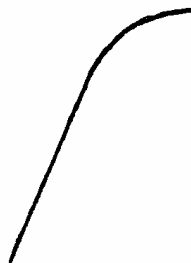
The measurements should be taken in the glasshouse on cotyledons of 40 seedlings. If the two cotyledons differ in size, the biggest one should be measured. The length is defined as the distancebetweentheinclinationatthetopofthecotyledonandthepointwherethe width of the petiole is about 4 mm. The width of the cotyledon should be measured at the widest pointofthecotyledons.



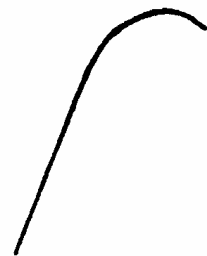
Ad. 6:Leaf: reflexion of top



3
weak

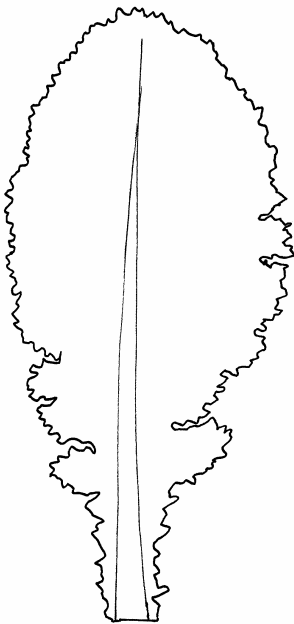


5
medium

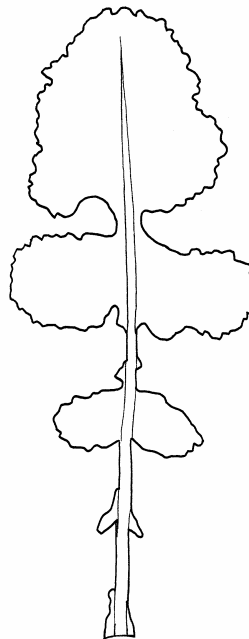


7
strong

Ad.8:Leaf:type

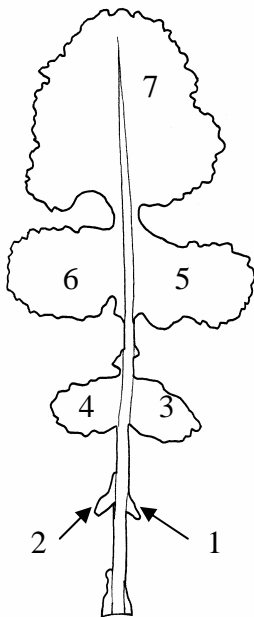


1
entire



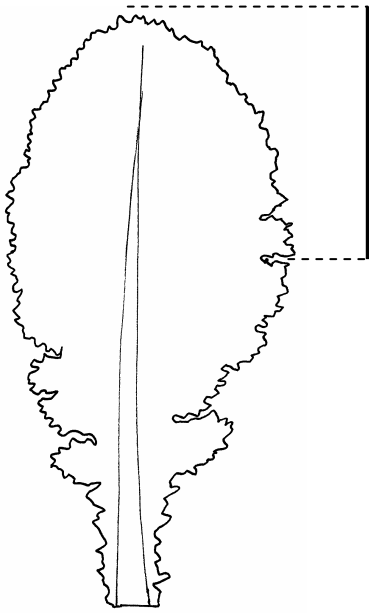
2
lobed

Ad.9:Leaf: number of lobes

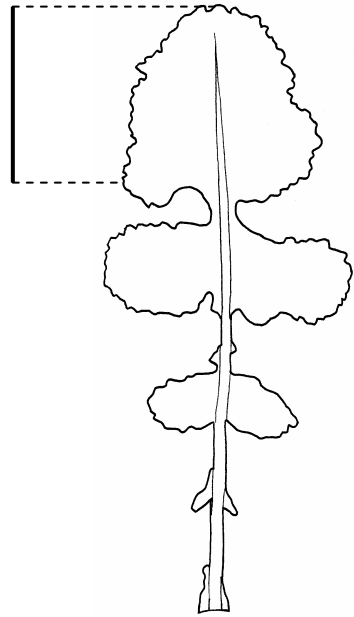


Part of the leaf blade are considered as lobes if their length is at least equivalent to the width of the leaf petiole at their point of attachment and if both notches of the blade have at least half the length of the lobe itself.

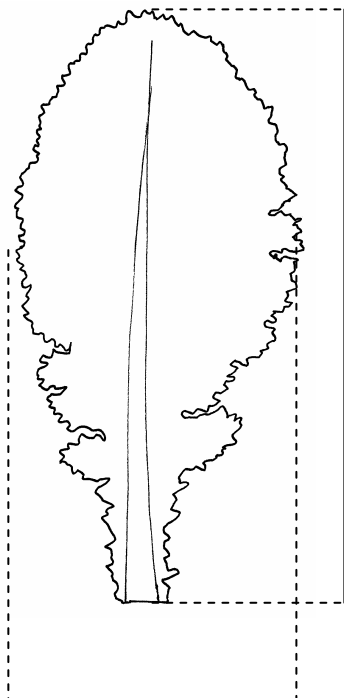
Ad. 11:Leaf:dentation



Part on which
dentations should
be recorded

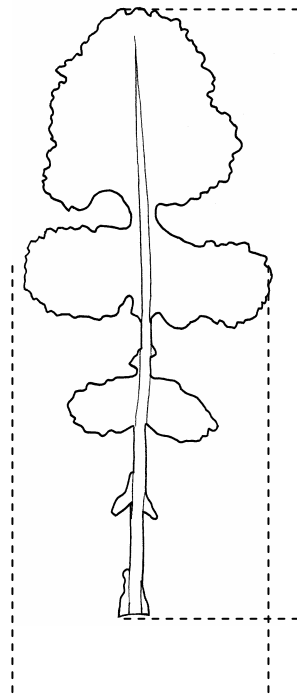


Ad. 12 + 13:Leaf: length (blade and petiole)(12) and width (widest point)(13)



12

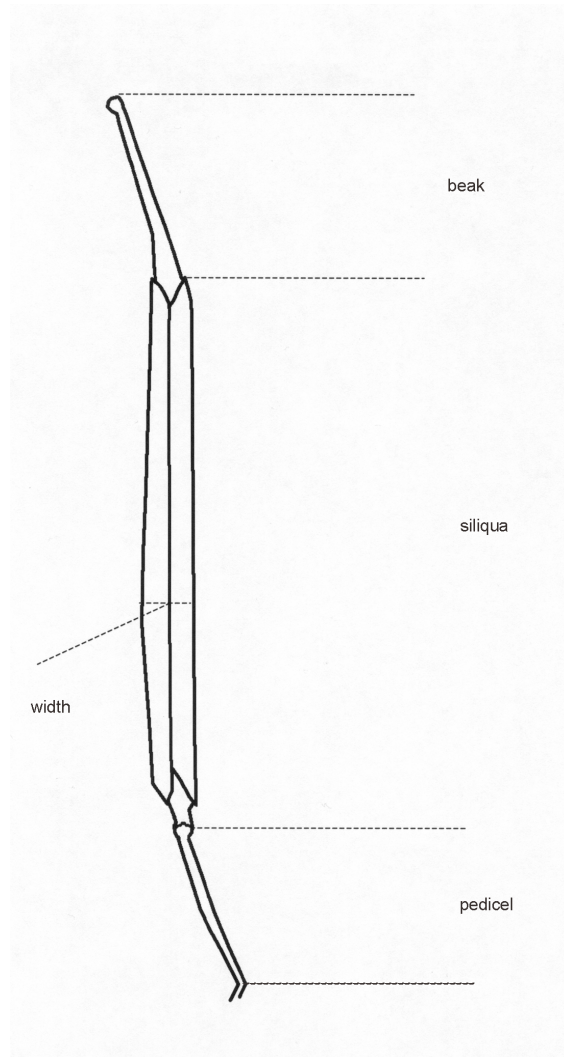
13



12

13

Ad. 22 to 25: Siliqua: length (between pedicel and beak) (22), width (widest point) (23),
lengthofbeak(24) and lengthofpedicel (25)



Ad. 26: Seed:frequencyofseedswithyellowcolorationpresent

Seedofthesubmittedsampleshouldbemixedandsampledusingappropriatemethods.

A minimum sample size of 500 seeds, divided from the bulk into at least 2 replicates, is recommended. Immature (greenish colored) or infected seeds should be removed from the sample before counting. Seeds with any yellow coloration on the testa are counted as present and represented as the frequency occurring in the sample.

Visual assessment of the bulk sample will not give an accurate assessment of the frequency of seeds with yellow coloration. Entirely yellow seeds will have a greater influence on the bulk sample colour than seeds which are partially yellow.

Frequency of yellow seeds:

1	<10%	4	30-39%	7	60-69%
2	10-19%	5	40-49%	8	70-79%
3	20-29%	6	50-59%	9	>80%

KEY FORTHEGROWTHSTAGES
according to Ber kenkamp, 1973

KEY	GENERAL DESCRIPTION
0	<u>Germination</u>
00	Dry seed
10	<u>Seedling growth</u>
11	Appearance of cotyledons
13	Cotyledon expanded
15	1 leaf -stage
17	2 leaf -stage
19	3 leaf -stage
20	<u>Rosette</u>
21	4 leaf -stage
22	5 leaf -stage
23	6 leaf -stage
24	7 leaf -stage
25	8 leaf -stage
26	9-11 leaf -stage
27	12 or more leaves are completely developed
30	<u>Stem elongation</u>
31	Distance between cotyledons and vegetation point is more than 5 cm
35	Distance between cotyledons and vegetation point is more than 15 cm
39	Distance between cotyledons and vegetation point is more than 25 cm
50	<u>Bud formation</u>
51	Terminal bud is present, not raised above leaves
53	Terminal bud is raised above level of leaves
57	Pedicels are elongating
59	Buds are yellowing
60	<u>Flower</u>
61	First open bud on terminal raceme
62	Few buds are open on terminal raceme
64	Full flower, lower siliques are elongating
65	Lower siliques are starting to fill, less than 5% of buds are not yet open
67	Seeds in lower siliques are enlarging, all buds are open
70	<u>Siliqua</u>
71	Seeds in lower siliques are in full size translucent
75	Seeds in lower siliques are green, opaque
79	All seeds of siliques on terminal raceme are dark
80	<u>Maturation</u>
81	Seeds in lower siliques on terminal raceme show brown areas
85	Seeds in upper siliques show brown areas
89	Brown siliques are brittle, stems are dry

IX. Literature

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X. TechnicalQuestionnaire

		ReferenceNumber (nottobefilledinbytheapplicant)
<p>TECHNICALQUESTIONNAIRE tobecompletedinconnectionwithanapplicationforplantbreeders'rights</p>		
1. Species	<i>Brassicarapa L.var.silvestris</i> (Lam.)Briggs. TURNIPRAPE	
	<ul style="list-style-type: none">• Springtype <input type="checkbox"/>• Wintertype <input type="checkbox"/>	
2. Applicant(Nameandaddress)		
3. Proposeddenominationorbreeder'sreference		

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

4.1 Type of material

- (a) inbred line
 - male sterile line
 - male fertile line
 - (b) hybrid
 - male sterile hybrid
 - male fertile hybrid
 - (c) open-pollinated variety
 - (d) synthetic variety
 - (e) other (please indicate)
-

4.2 Formula (if applicable, for each component in separate sheets, the information according to the following Chapters 5 to 7 to be added)

Single hybrid

- Denomination or breeder's reference of female parent line
- Denomination or breeder's reference of male parent line

Three-way hybrid

Denomination or breeder's reference of:

- single hybrid used
- female parent line of the single hybrid
- male parent line of the single hybrid
- female parent of the three-way hybrid
- male parent line of the three-way hybrid

NB: In case of use of male sterility system, indicate the name of the maintainer line of the female parent line

In case of use of self-incompatibility system, indicate, if applicable, the name of the self-compatible lines

4.3 Genetic origin and breeding method

4.4 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 (Spring variety; Winter variety)	Note
5.1 Ploidy (2)		
diploid	Nokonova; Rex	2[]
tetraploid	-; PerkoPVH	4[]
5.2 Leaf: type (8)		
entire	-; Chicon	1[]
lobed	Kove; PerkoPVH	2[]
5.3 Time of flowering (50% of plants with at least one open (16) flower)		
very early	Hymac; Primax	1[]
early	Agena;	3[]
medium	Kova; Rex	5[]
late	Munro;	7[]
very late	Nokonova; Triton	9[]

Characteristics	Example Varieties (Spring variety; Winter variety)	Note
5.4 Flower: color of petal (17)		
lemony yellow	Kulta; Perko PVH	1[]
orange yellow		2[]
5.5 Plant: total length including side branches (21)		
short		3[]
medium	Kulta	5[]
long	Harmoni	7[]

6. Similar varieties and differences from these varieties

Denomination of similar variety	Characteristic in which the similar variety is different ^{o)}	State of expression of similar variety	State of expression of candidate variety

^{o)} 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 Resistancetopestsanddiseases

7.2 Specialconditionsfortheexaminationofthevariety

7.3 Mainuse

- a) seed
- b) forage
- c) otheruse(specify)

7.4 Otherinformation

8. Authorizationforrelease

(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]