



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 OBTENCIÓNES
VEGETALES

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

RAPESEED

(Brassica napus L. oleifera)

GENEVA
1996, 2002*

* The Technical Committee, during its session in April 2002, revised paragraph 4 of Chapter IV of the Test Guidelines for RapeSeed. TG/36/6Corr. replaces document TG/36/6.

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TG/36/6Corr.

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DATE:1996 -10-18+2002 -04-17*

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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. SubjectoftheseGuidelines

These Test Guidelines apply to all varieties of *Brassica napus L. oleifera*, comprising lines and narrowed population varieties (varieties with identical progenies), hybrids (varieties with controlled cross-pollination) and synthetic varieties (varieties with defined components and defined marketing generation).

II. MaterialRequired

1. The competent authorities decide when, where and in what quantity and quality the plant material 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:

500 g.

In case of hybrid and synthetic varieties, as a minimum 100 g seed per component should be supplied in addition. The seed should at least meet the minimum requirements for germination capacity, moisture content and purity for marketing certified seed in the country in which the application is made. The germination capacity should be as high as possible.

2. If requested by the competent authority, at least 50 unthreshed plants should also be submitted. The plants should be well developed and not obviously affected by any pest or disease. They should contain a sufficient number of viable seeds to establish a satisfactory row of plants for observation.
3. 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. ConductofTests

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 field tests should be carried out under conditions ensuring normal growth. 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 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 about 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. To assess distinctness of hybrids, a pre screening system on the basis of the parent allines and the formula may be established according to the following recommendations:

(a) description of parent allines according to the Test Guidelines;

(b) check of the originality of those parental lines in comparison with the reference collection, based on the characteristics in Chapter VII in order to screen the closest inbred lines;

(c) check of the originality of the hybrid formula in comparison with those of hybrids in common knowledge, taking into account the closest inbred lines;

(d) assessment of the distinctness at the hybrid level of varieties with a similar formula.

2. Unless otherwise stated, in the case of plant -by-plant assessment of distinctness and stability, all observations should be made on 60 plants or parts of 60 plants.

3. For the assessment of uniformity of characteristics on the plot as a whole (visual assessment by a single observation of a group of plants or parts of plants), the number of aberrant plants or parts of plants should be counted on the total of 200 plants.

4. For the assessment of uniformity of inbred lines a population standard of 2% with an acceptance probability of at least 95% should be applied. In the case of hybrids, the population standard should be 10% with the same acceptance probability of at least 95%. For other types of varieties, the general rules for the testing of uniformity apply as stated in the General Introduction to the Test Guidelines.

5. In case progenies of unthreshed plants are observed, the tolerance for uniformity in the progeny rows should be four off -type rows in 40.

6. In case more than one seed submission is made, a comparison should be made in the subsequently years of sowing between the initial seed sample and any further seed submission.

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) Seed:erucic acid(characteristic1);
- (b) Leaf:lobes(characteristic5);
- (c) Timeofflowering(characteristic11).

VI. CharacteristicsandSymbols

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 example varieties, separated by a semicolon, are indicated for spring rape and winter 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 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.

VII. TableofCharacteristics/Tableaudescaractères/Merkmalstabelle/Tabladecaracteres

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplares	Note/ Nota
1. 00 (*) (+)	Seed:erucicacid	Graine:acide éruquique		Samen:Erucasäure	Semilla:ácido erúlico	
	absent	absent	fehlend	ausente		1
	present	présent	vorhanden	presente		9
2. 15-17 (+)	Cotyledon:length	Cotylédon: longueur		Keimblatt:Länge	Cotiledón:longitud	
	short	court	kurz	corto	Briol;Akela	3
	medium	moyen	mittel	medio	Anka,Lisonne;Idol	5
	long	long	lang	largo	Astor;Anton	7
3. 15-17 (+)	Cotyledon:width	Cotylédon:largeur	Keimblatt:Breite		Cotiledón:anchura	
	narrow	étroit	schmal	estrecho	Briol;Akela	3
	medium	moyen	mittel	medio	Lisonne;Doublol	5
	broad	large	breit	ancho	Astor;Falcon	7
4. 23-27 (*)	Leaf:greencolor	Feuille:couleur verte		Blatt:Grünfärbung	Hoja:c olorverde	
	light	claire	hell	claro	Linetta;Anton	3
	medium	moyenne	mittel	medio	Drakkar,Jaguar;Akela	5
	dark	foncé	dunkel	oscuro	Logo,Orly;Gaspard	7
5. 23-27 (*) (+)	Leaf:lobes	Feuille:lobes		Blatt:Lappen	Hoja:lóbulos	
	absent	absents	fehlend	ausentes	Arista,Orly;Akela	1
	present	présents	vorhanden	presentes	Drakkar;Falcon, Samourai	9

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejempl	Note/ Nota
6. 23-27 (*) (+)	Leaf:numberof lobes(fully developedleaf)	Feuille:nombredelobes(feuille complètement développée)	Blatt:Anzahl Lappen (vollentwickeltes Blatt)	Hoja:númerodelos lóbulos(hoja completamente desarrollada)		
	few	faible	gering	bajo	Jaguar; -	3
	medium	moyen	mittel	medio	Drakkar; Falcon	5
	many	élevé	groß	alto	Lisonne; -	7
7. 23-27 (*) (+)	Leaf:dentationof margin	Feuille:denturedu bord	Blatt:Zähnungdes Randes	Hoja:dentadodel margen		
	weak	faible	gering	débil	Orly; Arvor	3
	medium	moyenne	mittel	medio	Drakkar; Diadem, Tapidor	5
	strong	forte	stark	ausente	Briol; Stego	7
8. 23-27 (+)	Leaf:length (bladeandpetiole) (limbeetpetiole)	Feuille:longueur (limbeetpetiole)	Blatt:Länge (SpreiteundStiel)	Hoja:longitud (limboypecíolo)		
	short	courte	kurz	corta	Polo; Hermes	3
	medium	moyenne	mittel	media	Lisonne; Cobra	5
	long	longue	lang	larga	Amadeus; Barnapoli	7
9. 23-27 (+)	Leaf:width (widestpoint)	Feuille:largeur (au point le plus large)	Blatt:Breite(an breitestesterStelle)	Hoja:anchura (punto más ancho)		
	narrow	étroite	schmal	estrecha	Marinka; -	3
	medium	moyenne	mittel	media	Evita, Orly; Cobra	5
	broad	large	breit	ancha	-; Lirapid	7
10. 23-27 (+)	Varietieswith lobedleavesonly : Leaf:lengthof petiole	Variétésàfeuilles lobéesseulement : Feuille:longueur dupétiole	NurSortenmit gelapptenBlättern : Blatt:Längedes Stieles	Solamente variedadescon hojas lobuladas:Hoja: longitud delpecíolo		
	short	court	kurz	corto	Polo; Hermes	3
	medium	moyen	mittel	medio	Lisonne; Ceres	5
	long	long	lang	largo	Amadeus; Barnapoli	7

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejempl	Note/ Nota
11. 61-62 (*) (+)	Timeofflowering	Époque de floraison	Zeitpunkt der Blüte	Fechadefloración		
	veryearly	très précoce	sehr früh	muy temprana	Polo; -	1
	early	précoce	früh	temprana	Sponsor; Zeus	3
	medium	moyenne	mittel	media	Arista; Falcon	5
	late	tardive	spät	tardía	Orly; Emerald	7
	verylate	très tardive	sehr spät	muy tardía	Astor; Sparta	9
12. 62-63 (*)	Flower:colorof petals	Fleur:couleur des pétales	Blüte:Farbe der Blütenblätter	Flor:color de los pétalos		
	white	blancs	weiß	blanco	-; -	1
	cream	crème	cremefarben	crema	-; Hobson	2
	yellow	jaunes	gelb	amarillo	Lisonne; Balcon, Samourai	3
	orange-yellow	jaune-orange	orange gelb	amarillo-naranja	-; Pasha	4
13. 62-63	Flower:lengthof petals	Fleur:longueur des pétales	Blüte:Länge des Blütenblatts	Flor:longitud de los pétalos		
	short	courts	kurz	cortos	-; -	3
	medium	moyens	mittel	medios	Optima; Alfa, Ceres	5
	long	longs	lang	largos	-; Barnapoli	7
14. 62-63	Flower:widthof petals	Fleur:largeur des pétales	Blüte:Breite des Blütenblatts	Flor:anchura de los pétalos		
	narrow	étroits	schmal	estrechos	-; Hobson	3
	medium	moyens	mittel	medios	Optima; Tapidor	5
	broad	larges	breit	anchos	-; Alfa	7
15. 62-63	Productionof pollen	Productionde pollen	Pollenproduktion	Producción de polen		
	absent	absente	fehlend	ausente		1
	present	présente	vorhanden	presente		9

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejempl	Note/ Nota
16. 64 (+)	Plant:height(at fullflowering)	Plante:hauteur(à pleinefloraison)	Pflanze:Höhe(bei Vollblüte)	Planta:altura(en plenafloración)		
	low	basse	niedrig	baja	Nimbus;Samourai	3
	medium	moyenne	mittel	media	Optima;Wotan	5
	tall	haute	hoch	alta	Logo,Orly;Sparta, Link	7
17. 75-80 (*)	Plant:totallength includingside branches	Plante:longueur totale,branches latéralesincluses	Pflanze: Gesamtlänge einschließlich Seitenzweige	Planta:longitud totalincluyendolas ramaslaterales		
	veryshort	très courte	sehr kurz	muy corta	Polo; -	1
	short	courte	kurz	corta	Marinka;Bristol	3
	medium	moyenne	mittel	media	Lisonne,Rally; Diadem,Doublol	5
	long	longue	lang	larga	Orly;Hobson	7
	verylong	très longue	sehr lang	muylarga	FuraxNova;Stego	9
18. 75-89 (+)	Siliqua:length (betweenpeduncle andbeak)	Siliqua:longueur (entrepedonculeet bec)	Schote:Länge (zwischenStielund Spitze)	Silicua:longitud (entreelpedúnculo ylapunta)		
	short	courte	kurz	corta	Nimbus;Eurol	3
	medium	moyenne	mittel	media	Marinka;Ceres	5
	long	longue	lang	larga	Drakkar;Barcoli	7
19. 75-89 (+)	Siliqua:lengthof beak	Siliqua:longueur dubec	Schote:Längeder Spitze	Silicua:Longitud de lapunta		
	short	court	kurz	corta	Logo,Orly;Idol	3
	medium	moyen	mittel	media	Ligule,Lisonne;Ceres	5
	long	long	lang	larga	Drakkar;Barcoli	7

Stage ¹⁾ Stade ¹⁾ Stadium ¹⁾ Estado ¹⁾	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejempl	Note/ Nota
20. 75-89 (+)	Siliqua:lengthof peduncle	Silique:longueur dupédoncule	Schote:Länge des Stieles	Silicua:longitud del pedúnculo		
	short	court	kurz	corto	-; Bristol, Eurol	3
	medium	moyen	mittel	medio	Derby; Ceres	5
	long	long	lang	largo	Drakkar; Stego	7
21. (+)	Tendencytoform inflorescencesin yearofsowingfor springsowntrials	Tendanceàformer desinflorescences l'annéedusemis danslessessais semésau printemps	NeigungzurBildung vonBlütenständen imAussaatjahrbei Frühjahrsaussaat	Tendenciaaformar infloresciasel añodesiembraen losensayos sembradosen primavera		
	absentorvery weak	absenteoutrès faible	fehlendodersehr gering	ausenteomuydébil	-; Falcon	1
	weak	faible	gering	débil	-; -	3
	medium	moyenne	mittel	media	-; Eurol	5
	strong	forte	stark	fuerte	-; Cobra	7
	verystrong	trèsforte	sehrstark	muyfuerte	-; -	9
22. (+)	Tendencytoform inflorescencesin yearofsowingfor late summer sown trials	Tendanceàformer desinflorescences l'annéedusemis danslessessais semés tardenété	NeigungzurBildung vonBlütenständen imAussaatjahrbei Spätsommeraussaat	Tendenciaaformar infloresciasel añodesiembraen losensayos sembrados alfinal delverano		
	absentorvery weak	absenteoutrès faible	fehlendodersehr gering	ausenteomuydébil	Petranova; -	1
	weak	faible	gering	débil	Kardinal; -	3
	medium	moyenne	mittel	media		5
	strong	forte	stark	fuerte	Lisonne; -	7
	verystrong	trèsforte	sehrstark	muyfuerte	Drakkar; -	9

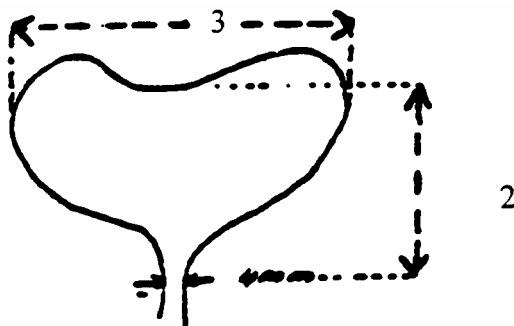
VIII. ExplanationontheTableofCharacteristics

Ad.1:Seed:erucicacid

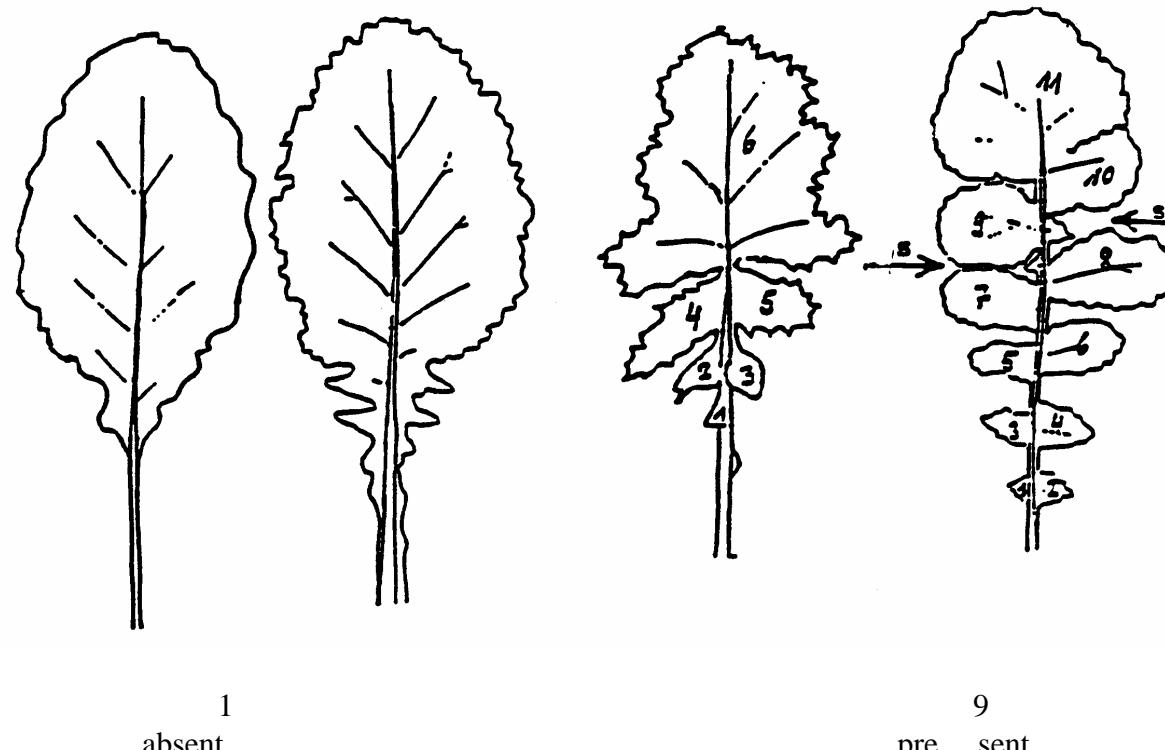
The erucic acid content should be observed on seeds sent in by the applicant. It should be expressed as a percentage by mass of methyl esters in accordance with the ISO standard in document 5508, paragraph 6.2.2.1. Seed containing 2% or less of erucic acid will be classified as "absent."

Ad.2+3:Cotyledon:length (2)andwidth(3)

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 distance between the inclination at top of the cotyledon and the point where the width of the petiole is about 4 mm. The width of the cotyledon should be measured at the widest point of the cotyledons.

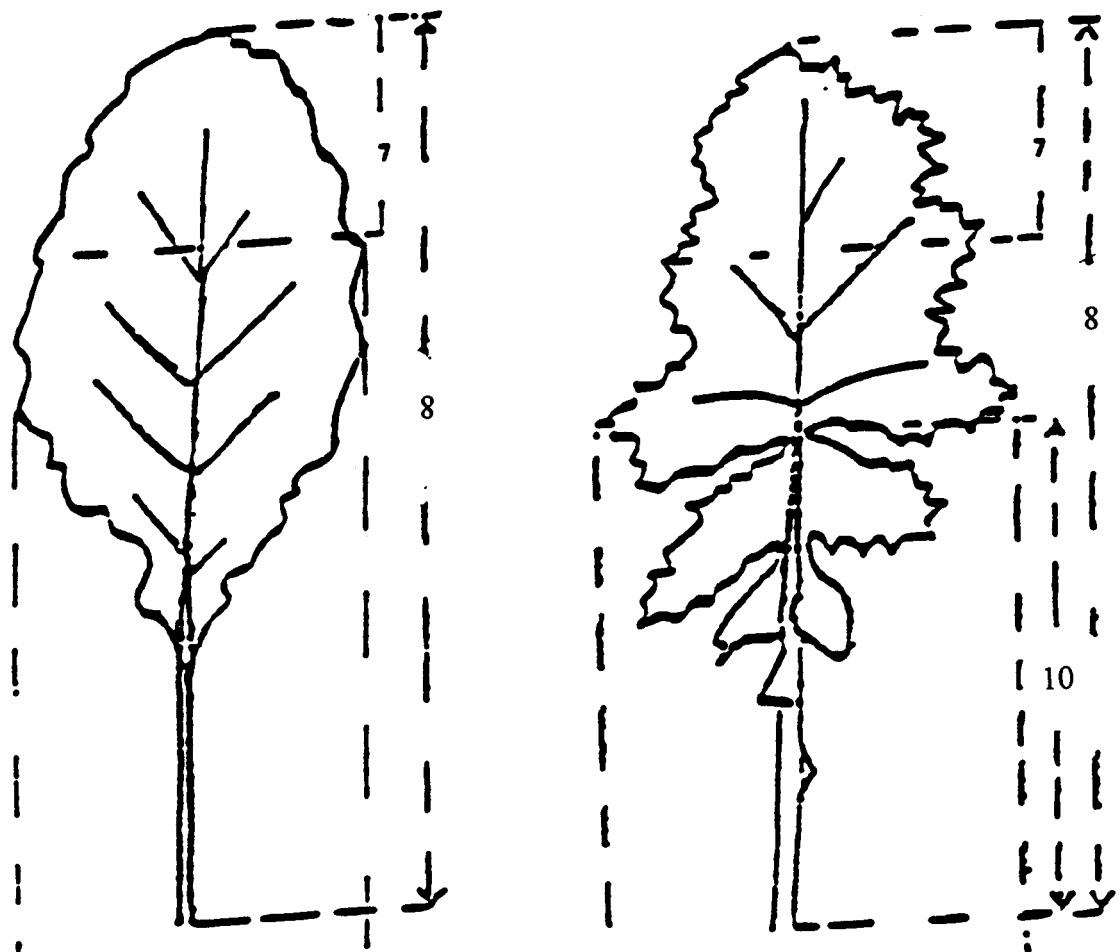


Ad.5+6:Leaf:presenceandnumberoflobes



Absence or presence of lobing should be observed on the whole plant at rosette stage. Parts 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 the upper notch of the blade has at least half the length of the lobe itself. Secondary lobes(s) are not counted.

Ad.7 -10:Leaf:dentation(7),length(8),width(9),lengthofpetiole(10)



7=partonwhichthedentationshouldberecorded(ch characteristic7)

Ad.11:Timeofflowering

The observation should be done at least three times per week and more frequently if there is any need to do so. When assessed on individual plants, the date should be calculated--if necessary by interpolation --at which 50% of plants show at least one open flower. When assessed on the plot as a whole, the recommended percentage is 10%.

Ad.16:Plant:height(atfullflowering)

The height of the plants should be assessed when all normally developed plants have opened at least one flower.

Ad.18 -20:Siliqua

All observations on the siliquas should be recorded in the mid part of the inflorescence of the main stem.

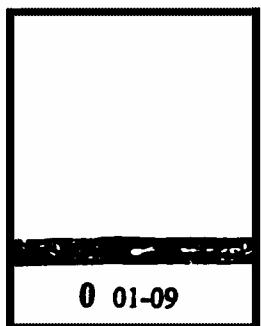
Ad.21+22:Tendencytoforminflorescencesintheyearofsowing

The tendency to form inflorescences in the year of sowing of winter rape varieties should be recorded in spring sown trials; that of spring rape varieties in late summer sown trials. The observation of the growth stage reached of winter rape varieties should be made in summer when the late spring rape varieties are flowering; that of spring rape varieties in autumn, when their development stagnates.

KEYFORTHEGROWTHSTAGES

KEY	GENERALDESCRIPTION
0	<u>Germination</u>
00	DrySeed
10	<u>Seedlinggrowth</u>
11	Appearanceofcotyledons
13	Cotyledonsexpanded
15	1leaf -stage
17	2leaf -stage
19	3leaf -stage
20	<u>Rosette</u>
21	4leaf -stage
22	5leaf -stage
23	6leaf -stage
24	7leaf -stage
25	8leaf -stage
26	9-11leaf -stage
27	12ormoreleavesarecompletely developed
30	<u>Stemelongation</u>
31	Distancebetweencotyledonsandvegetationpointismorethan5 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>Budformation</u>
51	Terminalbudispresent,notraisedabovleaves
53	Terminalbudisraisedabovlevelofleaves
57	Pedicelsareelongating
59	Budsareyellowing

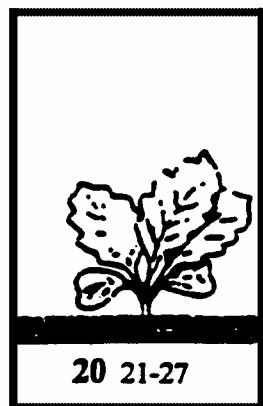
KEY	GENERALDESCRIPTION
60	<u>Flower</u>
61	Firstopenbud onterminalraceme
62	Fewbudsareopenonterminalraceme
64	Fullflower,lowersiliquesareelongating
65	Lowersiliques are starting to fill, less than 5% ofbuds are not yet open
67	Seedsinlowersiliquesareenlarging,allbudsareopen
70	<u>Siliqua</u>
71	Seedsinlowersiliquesareinfullsizetranslucent
75	Seedsinlowersiliquesaregreen,opaque
79	Allseedsofsiliquesonterminalracemearedark
80	<u>Maturation</u>
81	Seedsinlowersiliquesonterminalracemes show brownareas
85	Seedsinuppersiliques showbrownareas
89	Brownsiliquesarebrittle,stem saredry



germination



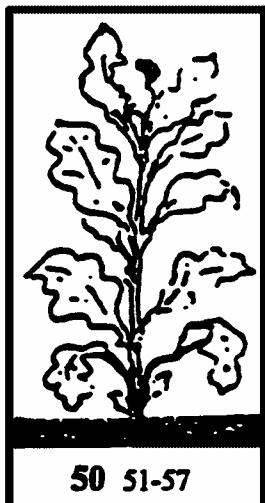
seedling growth



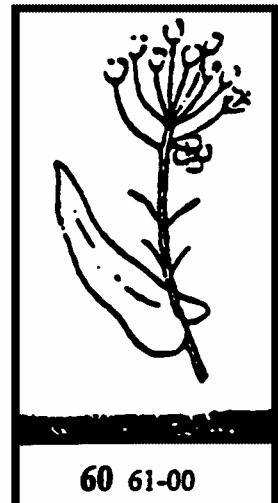
rosette



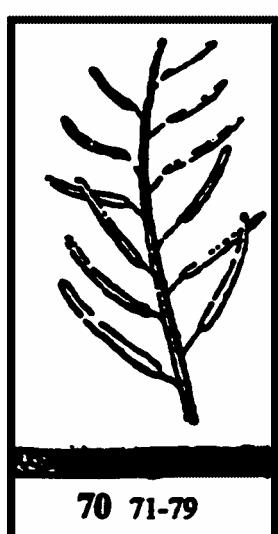
stem elongation



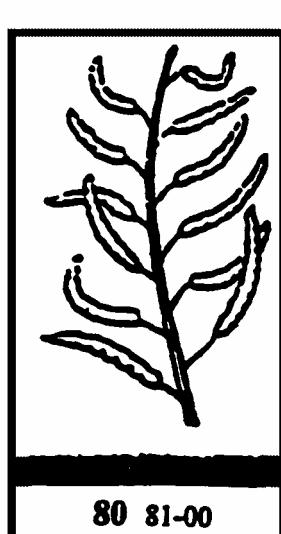
bud formation



flower



silique



maturity

IX. Literature

Berkenkamp, B., 1973: "A growth stagekeyforrape," Can.JournalPlantSci.55:413

Schütte, E., Steinberger, J. und Meier, U., 1982: "Entwicklungsstadien des Rapses," MerkblattderBiologischenBundesanstaltfürLand - undForstwirtschaft,Nr.27/7

X. TechnicalQuestionnaire

	ReferenceNumber (not to be filled in by the applicant)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights	
1. Species	<i>Brassicus napus L. oleifera</i> RAPSEED
1.1 Forma <i>ibernalis</i>	<input type="checkbox"/>
1.2 Forma <i>aestiva</i>	<input type="checkbox"/>
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	

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) narrowed population
- (c) hybrid
 - male sterile hybrid
 - male fertile hybrid
 - self incompatible hybrid
- (d) other (please indicate)

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

Single hybrid

- Denomination or breeder's reference of female parent alline
.....
- Denomination or breeder's reference of male parent alline
.....

Three-way hybrid

Denomination or breeder's reference of:

- single hybrid used
.....
- female parent alline of the single hybrid
.....
- male parent alline of the single hybrid
.....
- female parent of the three - way hybrid
.....
- male parent alline 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 alline

.....

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

.....

4.3 Geneticoriginandbreedingmethod

(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 authorization.

4.4 Otherinformationongeneticoriginandbreedingmethod

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
5.1 Seed:erucic acid (1)		
absent		1[]
present		9[]
5.2 Leaf:lobes (5)		
absent	Arista,Orly;Akela	1[]
present	Drakkar;Falcon, Samoura i	9[]

Characteristics	Example Varieties	Note	
5.3 Time of flowering (11) (quote me and date of flowering of variety as well as two well-known comparable varieties)	-	
5.4 Plant: total length including side branches (17) (quote length of variety as well as two well-known comparable varieties)	-	
6. Similarities 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 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

(a) Group

- Spring oilseed rape
- Winter oilseed rape
- Spring forager rape
- Winter forager rape
- Low glucosinolate content
- High glucosinolate content

(b) Other conditions

7.3 Other information

[End of document]