



TG/36/7

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## INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

## OILSEED RAPE

UPOV Code(s): BRASS\_NAP\_NUS

*Brassica napus* L. ssp. *napus*

## GUIDELINES

## FOR THE CONDUCT OF TESTS

## FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative names:\*

Botanical name	English	French	German	Spanish
<i>Brassica napus</i> L. ssp. <i>napus</i> , <i>Brassica campestris</i> L. ssp. <i>napus</i> (L.) Hook. f. & T. Anderson, <i>Brassica napus</i> L. ssp. <i>oleifera</i> (Delile) Sinskaya, <i>Brassica napus</i> L. var. <i>oleifera</i> Delile, <i>Brassica napus</i> L. var. <i>sahariensis</i> A. Chev.	Oilseed Rape, Rapeseed, Swede Rape, Canola	Colza, Canola	Raps	Colza

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](http://www.upov.int)), for the latest information.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Brassica napus* L. ssp. *napus*.

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:

Candidate: 300g  
Component of controlled-cross pollination hybrids: 50g

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.

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

2.5 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*

3.1.1 The minimum duration of tests should normally be two independent growing cycles.

3.1.2 The two independent growing cycles should be in the form of two separate plantings.

3.1.3 The testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.

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 The optimum stage of development for the assessment of each characteristic is indicated by a number in the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.3.

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 200 plants, which should be divided between at least 2 replicates.

3.4.2 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.

3.4.3 The tendency to form inflorescences when sown in alternate season of winter rape varieties should be recorded in spring sown trials; that of spring rape varieties in late summer sown trials. Each test should be designed to result in at least 100 plants.

### 3.5 *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.

To assess distinctness of hybrids, the parent lines and the formula may be used according to the following recommendations:

- (i) description of parent lines according to the Test Guidelines;
- (ii) check of the originality of the parent lines in comparison with the variety collection, based on the characteristics in Chapter 7, in order to identify similar parent lines;
- (iii) check of the originality of the hybrid formula in relation to the hybrids in the variety collection, taking into account the most similar lines; and
- (iv) assessment of the distinctness at the hybrid level for varieties with a similar formula.

Further guidance is provided in documents TGP/9 "Examining Distinctness" and TGP/8 "Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability".

#### 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.

#### 4.1.4 Number of Plants or Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 45 plants or parts of plants taken from each of 45 plants and any other observations made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 1.

#### 4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the Table of Characteristics (see document TGP/9 "Examining Distinctness", Section 4 "Observation 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

Type of observation: visual (V) or measurement (M)

"Visual" observation (V) is an observation made on the basis of the expert's judgment. For the purposes of this document, "visual" observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

#### 4.2 Uniformity

- 4.2.1 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:
- 4.2.2 These Test Guidelines have been developed for the examination of seed-propagated varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.
- 4.2.3 The assessment of uniformity for cross-pollinated varieties should be according to the recommendations for cross-pollinated varieties in the General Introduction.
- 4.2.4 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.
- 4.2.5 Where the assessment of a hybrid variety involves the parent lines, the uniformity of the hybrid variety should, in addition to an examination of the hybrid variety itself, also be assessed by examination of the uniformity of its parent lines.
- 4.2.6 For the assessment of uniformity of inbred varieties and component lines of hybrid varieties, a population standard of 2% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 200 plants, 7 off-types are allowed. For the assessment of uniformity of single and multiple-cross hybrid varieties, a population standard of 10% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 200 plants, 27 off-types are allowed.

### 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 further examined by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the initial 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.

## 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:
- (a) Seed: erucic acid (characteristic 1)
  - (b) Leaf: lobes (characteristic 9)
  - (c) Time of flowering (characteristic 12)
  - (d) Flower: color of petals (characteristic 13)
  - (e) Production of pollen (characteristic 17)
  - (f) Plant: length (characteristic 18)
- 5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 "Examining Distinctness".

## 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*

- 6.2.1 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.
- 6.2.2 All relevant states of expression are presented in the characteristic.
- 6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 "Development of Test Guidelines".

## 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*

- 6.4.1 Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.
- 6.4.2 In the table of characteristics, the seasonal type of the example varieties is denoted as (S) for Spring and (W) for winter.

## 6.5 Legend

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1	2	3	4	5	6	7	
		Name of characteristics in English	Nom du caractère en français	Name des Merkmals auf Deutsch	Nombre del carácter en español		
		states of expression	types d'expression	Ausprägungsstufen	tipos de expresión		

- 1 Characteristic number
- 2 (\*) Asterisked characteristic – see Chapter 6.1.2
- 3 Type of expression  
 QL Qualitative characteristic – see Chapter 6.3  
 QN Quantitative characteristic – see Chapter 6.3  
 PQ Pseudo-qualitative characteristic – see Chapter 6.3
- 4 Method of observation (and type of plot, if applicable)  
 MG, MS, VG, VS – see Chapter 4.1.5
- 5 (+) See Explanations on the Table of Characteristics in Chapter 8.2
- 6 (a)-(c) See Explanations on the Table of Characteristics in Chapter 8.1
- 7 Growth stage key See Explanations on the Table of Characteristics in Chapter 8.3



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

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>1.</b>	<b>QL</b>	<b>MG</b>	<b>(+)</b>	<b>00</b>			
	<b>Seed: erucic acid</b>		<b>Graine : acide érucique</b>	<b>Samen: Erucasäure</b>	<b>Semilla: ácido erúxico</b>		
	low		bas	gering	bajo	(S) Lagoon, (W) Severino KWS	1
	high		élevé	hoch	alto	(S) Petranova, (W) Greenland, (W) MSL049C12	9
<b>2.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(a)</b>	<b>13-17</b>			
	<b>Cotyledon: ratio saddle height/width</b>		<b>Cotylédon : rapport hauteur/largeur du sillon</b>	<b>Keimblatt: Verhältnis Sattelhöhe/Breite</b>	<b>Cotiledón: relación altura/anchura del sillín</b>		
	very low		très bas	sehr klein	muy baja		1
	very low to low		très bas à bas	sehr klein bis klein	muy baja a baja		2
	low		bas	klein	baja	(S) PR46H75, (W) Severino KWS	3
	low to medium		bas à moyen	klein bis mittel	baja a media		4
	medium		moyen	mittel	media	(S) Proximo, (W) DK Expansion	5
	medium to high		moyen à élevé	mittel bis groß	media a alta		6
	high		élevé	groß	alta	(S) Joscha KWS, (W) AH 12	7
	high to very high		élevé à très élevé	groß bis sehr groß	alta a muy alta		8
	very high		très élevé	sehr groß	muy alta		9
<b>3.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(a)</b>	<b>13-17</b>			
	<b>Cotyledon: saddle depth</b>		<b>Cotylédon : profondeur du sillon</b>	<b>Keimblatt: Satteltiefe</b>	<b>Cotiledón: profundidad del sillín</b>		
	very shallow		très peu profonde	sehr flach	muy poco profunda		1
	very shallow to shallow		très peu profonde à peu profonde	sehr flach bis flach	muy poco profunda a poco profunda		2
	shallow		peu profonde	flach	poco profunda	(S) FJ6447, (S) MS 4903, (W) MSL049C12	3
	shallow to medium		peu profonde à moyenne	flach bis mittel	poco profunda a media		4
	medium		moyenne	mittel	media	(S) Proximo, (W) Blazen	5
	medium to deep		moyenne à profonde	mittel bis tief	media a profunda		6
	deep		profonde	tief	profunda	(S) MSL 545 C, (W) WRG 1501	7
	deep to very deep		profonde à très profonde	tief bis sehr tief	profunda a muy profunda		8
	very deep		très profonde	sehr tief	muy profunda		9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>4.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(a)</b>	<b>13-17</b>		
	<b>Cotyledon: ratio lobe separation/width</b>	<b>Cotylédon : rapport séparation des lobes/largeur</b>	<b>Keimblatt: Verhältnis Einbuchtungsbreite/Breite</b>	<b>Cotiledón: relación separación de lóbulos/anchura</b>		
	very low	très bas	sehr klein	muy baja		1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja		2
	low	bas	klein	baja	(S) R501S11, (W) WRG 1501	3
	low to medium	bas à moyen	klein bis mittel	baja a media		4
	medium	moyen	mittel	media	(S) Proximo, (W) PT256	5
	medium to high	moyen à élevé	mittel bis groß	media a alta		6
	high	élevé	groß	alta	(S) D 619908, (W) DK Expansion	7
	high to very high	élevé à très élevé	groß bis sehr groß	alta a muy alta		8
	very high	très élevé	sehr groß	muy alta		9
<b>5.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(a)</b>	<b>13-17</b>		
	<b>Cotyledon: ratio lobe separation/saddle depth</b>	<b>Cotylédon : rapport séparation des lobes/profondeur du sillon</b>	<b>Keimblatt: Verhältnis Einbuchtungsbreite/Satteltiefe</b>	<b>Cotiledón: relación separación de lóbulos/profundidad del sillon</b>		
	very low	très bas	sehr klein	muy baja		1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja		2
	low	bas	klein	baja	(S) Silvershadow, (W) PX131	3
	low to medium	bas à moyen	klein bis mittel	baja a media		4
	medium	moyen	mittel	media	(S) Proximo, (W) Severino KWS	5
	medium to high	moyen à élevé	mittel bis groß	media a alta		6
	high	élevé	groß	alta	(S) FJ6447, (S) MS 4903, (W) Greenland	7
	high to very high	élevé à très élevé	groß bis sehr groß	alta a muy alta		8
	very high	très élevé	sehr groß	muy alta		9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>6.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(a)</b>	<b>13-17</b>		
	<b>Cotyledon: ratio saddle height/ lamina length</b>	<b>Cotylédon : rapport hauteur du sillon /longueur du limbe</b>	<b>Keimblatt: Verhältnis Sattelhöhe/ Blattspreitenlänge</b>	<b>Cotiledón: relación altura del sillín/longitud de la lámina</b>		
	very low	très bas	sehr klein	muy baja		1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja		2
	low	bas	klein	baja	(W) PX131	3
	low to medium	bas à moyen	klein bis mittel	baja a media		4
	medium	moyen	mittel	media	(S) Jazz KWS, (W) DK Expansion	5
	medium to high	moyen à élevé	mittel bis groß	media a alta		6
	high	élevé	groß	alta	(S) Cleopatra, (W) Architect	7
	very high to high	élevé à très élevé	sehr groß bis groß	muy alta a muy alta		8
	very high	très élevé	sehr groß	muy alta		9
<b>7. (*)</b>	<b>QN</b>	<b>VG</b>		<b>23-27</b>		
	<b>Leaf: intensity of green color</b>	<b>Feuille : intensité de la couleur verte</b>	<b>Blatt: Intensität der Grünfärbung</b>	<b>Hoja: intensidad del color verde</b>		
	very weak	très faible	sehr gering	muy débil		1
	very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil		2
	weak	faible	gering	débil	(S) D 619908, (W) Axel	3
	weak to medium	faible à moyenne	gering bis mittel	débil a media		4
	medium	moyenne	mittel	media	(S) Joscha KWS, (W) Architect	5
	medium to strong	moyenne à forte	mittel bis stark	media a fuerte		6
	strong	forte	stark	fuerte	(S) 46130, (W) Kadore	7
	strong to very strong	forte à très forte	stark bis sehr stark	fuerte a muy fuerte		8
	very strong	très forte	sehr stark	muy fuerte		9
<b>8. (*)</b>	<b>QL</b>	<b>VG</b>		<b>23-27</b>		
	<b>Leaf: glaucosity</b>	<b>Feuille : glaucescence</b>	<b>Blatt: Bereifung</b>	<b>Hoja: glaucescencia</b>		
	absent	absente	fehlend	ausente		1
	present	présente	vorhanden	presente	(S) Proximo, (W) Architect	9
<b>9. (*)</b>	<b>QL</b>	<b>VG</b>	<b>(+)</b>	<b>(b)</b>	<b>23-27</b>	
	<b>Leaf: lobes</b>	<b>Feuille : lobes</b>	<b>Blatt: Lappung</b>	<b>Hoja: lóbulos</b>		
	absent	absents	fehlend	ausentes	(S) MSL 545 C, (W) Greenland	1
	present	présents	vorhanden	presentes	(S) Proximo, (W) Blazen	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>10. (*)</b>	<b>QN</b>	<b>MS/VG</b>	<b>(+)</b>	<b>(b)</b>	<b>23-27</b>	
	<b>Leaf: number of lobes</b>	<b>Feuille : nombre de lobes</b>	<b>Blatt: Anzahl Lappen</b>	<b>Hoja: número de lóbulos</b>		
	very few	très petit	sehr gering	muy bajo		1
	very few to few	très petit à petit	sehr gering bis gering	muy bajo a bajo		2
	few	petit	gering	bajo	(S) Brander, (W) Skye	3
	few to medium	petit à moyen	gering bis mittel	bajo a medio		4
	medium	moyen	mittel	medio	(S) Jazz KWS, (W) Blazen	5
	medium to many	moyen à élevé	mittel bis groß	medio a alto		6
	many	élevé	groß	alto	(S) PA4EN171, (W) Architect	7
	many to very many	élevé à très élevé	groß bis sehr groß	alto a muy alto		8
	very many	très élevé	sehr groß	muy alto		9
<b>11. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(b)</b>	<b>23-27</b>	
	<b>Leaf: incisions of margin</b>	<b>Feuille : incisions du bord</b>	<b>Blatt: Randeinschnitte</b>	<b>Hoja: incisiones del borde</b>		
	very weak	très faibles	sehr gering	muy débiles		1
	very weak to weak	très faibles à faibles	sehr gering bis gering	muy débiles a débiles		2
	weak	faibles	gering	débiles	(S) R501S11, (W) Akela	3
	weak to medium	faibles à moyennes	gering bis mittel	débiles a medias		4
	medium	moyennes	mittel	medias	(S) Proximo, (W) Blazen	5
	medium to strong	moyennes à fortes	mittel bis stark	medias a fuertes		6
	strong	fortes	stark	fuertes	(S) Fergus, (W) Severino KWS	7
	strong to very strong	fortes à très fortes	stark bis sehr stark	fuertes a muy fuertes		8
	very strong	très fortes	sehr stark	muy fuertes		9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>12. (*)</b>	<b>QN</b>	<b>MG/MS</b>	<b>(+)</b>			
	<b>Time of flowering</b>	<b>Époque de floraison</b>	<b>Zeitpunkt der Blüte</b>	<b>Época de floración</b>		
	very early	très précoce	sehr früh	muy temprana	(W) Kaban	1
	very early to early	très précoce à précoce	sehr früh bis früh	muy temprana a temprana		2
	early	précoce	früh	temprana	(S) Brander, (W) DK Expansion	3
	early to medium	précoce à moyenne	früh bis mittel	temprana a media		4
	medium	moyenne	mittel	media	(S) Jangle KWS, (W) Kadore	5
	medium to late	moyenne à tardive	mittel bis spät	media a tardía		6
	late	tardive	spät	tardía	(S) MSL 554 C, (W) Akela	7
	late to very late	tardive à très tardive	spät bis sehr spät	tardía a muy tardía		8
	very late	très tardive	sehr spät	muy tardía	(W) Greenland	9
<b>13. (*)</b>	<b>PQ</b>	<b>VG</b>		<b>62-65</b>		
	<b>Flower: color of petals</b>	<b>Fleur : couleur des pétales</b>	<b>Blüte: Farbe der Blütenblätter</b>	<b>Flor: color de los pétalos</b>		
	white	blanc	weiß	blanco	(W) Witt	1
	yellowish white	blanc jaunâtre	gelblichweiß	blanco amarillento	(S) Silvershadow, (W) Greenland	2
	yellow	jaune	gelb	amarillo	(S) Proximo, (W) Severino KWS	3
	orange yellow	jaune orangé	orange gelb	naranja amarillento		4
<b>14.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(+)</b>	<b>62-65</b>		
	<b>Flower: length of petals</b>	<b>Fleur : longueur des pétales</b>	<b>Blüte: Länge der Blütenblätter</b>	<b>Flor: longitud de los pétalos</b>		
	very short	très courte	sehr kurz	muy corta		1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta		2
	short	courte	kurz	corta	(S) PA4EN171, (W) MSL049C12	3
	short to medium	courte à moyenne	kurz bis mittel	corta a media		4
	medium	moyenne	mittel	media	(S) Jangle KWS, (W) Blazen	5
	medium to long	moyenne à longue	mittel bis lang	media a larga		6
	long	longue	lang	larga	(S) Sunder, (W) PR44D06	7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga		8
	very long	très longue	sehr lang	muy larga		9

	English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
<b>15.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(+)</b>	<b>62-65</b>		
	<b>Flower: width of petals</b>	<b>Fleur : largeur des pétales</b>	<b>Blüte: Breite der Blütenblätter</b>	<b>Flor: anchura de los pétalos</b>		
	very narrow	très étroite	sehr schmal	muy estrecha		1
	very narrow to narrow	très étroite à étroite	sehr schmal bis schmal	muy estrecha a estrecha		2
	narrow	étroite	schmal	estrecha	(S) MSL 545 C, (W) MSL236C11	3
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media		4
	medium	moyenne	mittel	media	(S) Proximo, (W) PT256	5
	medium to broad	moyenne à large	mittel bis breit	media a ancha		6
	broad	large	breit	ancha	(S) Lancia, (W) PX131	7
	broad to very broad	large à très large	breit bis sehr breit	ancha muy ancha		8
	very broad	très large	sehr breit	muy ancha		9
<b>16.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(+)</b>	<b>62-65</b>		
	<b>Flower: ratio length/width of petals</b>	<b>Fleur : rapport longueur/largeur des pétales</b>	<b>Blüte: Verhältnis Länge/Breite der Blütenblätter</b>	<b>Flor: relación longitud/anchura de los pétalos</b>		
	very low	très bas	sehr klein	muy baja		1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja		2
	low	bas	klein	baja	(S) R501S11, (W) DK Expansion	3
	low to medium	bas à moyen	klein bis mittel	baja a media		4
	medium	moyen	mittel	media	(S) Proximo, (W) WRG 1501	5
	medium to high	moyen à élevé	mittel bis groß	media a alta		6
	high	élevé	groß	alta	(S) Silvershadow, (W) Akela	7
	high to very high	élevé à très élevé	groß bis sehr groß	alta a muy alta		8
	very high	très élevé	sehr groß	muy alta		9
<b>17. (*)</b>	<b>QL</b>	<b>VG</b>		<b>62-65</b>		
	<b>Production of pollen</b>	<b>Production de pollen</b>	<b>Pollenproduktion</b>	<b>Producción de polen</b>		
	absent	absente	fehlend	ausente	(S) MSL 554 C, (W) MSL049C12	1
	present	présente	vorhanden	presente	(S) Proximo, (W) PT256	9

	English		français		deutsch		español		Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>18. (*)</b>	<b>QN</b>	<b>MG/MS</b>	<b>(+)</b>	<b>70-80</b>						
	<b>Plant: length</b>	<b>Plante : longueur</b>	<b>Pflanze: Länge</b>	<b>Planta: longitud</b>						
	very short	très courte	sehr kurz	muy corta						1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta						2
	short	courte	kurz	corta	(S) MSL 545 C, (W) PX131					3
	short to medium	courte à moyenne	kurz bis mittel	corta a media						4
	medium	moyenne	mittel	media	(S) Jazz KWS, (W) Skye					5
	medium to long	moyenne à longue	mittel bis lang	media a larga						6
	long	longue	lang	larga	(S) D 271310, (W) Annapolis					7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga						8
	very long	très longue	sehr lang	muy larga						9
<b>19.</b>	<b>QN</b>	<b>MS</b>	<b>(c)</b>	<b>75-89</b>						
	<b>Silique: length</b>	<b>Silique : longueur</b>	<b>Schote: Länge</b>	<b>Silicua: longitud</b>						
	very short	très courte	sehr kurz	muy corta						1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta						2
	short	courte	kurz	corta	(S) R501S11, (W) ICR 166					3
	short to medium	courte à moyenne	kurz bis mittel	corta a media						4
	medium	moyenne	mittel	media	(S) Joscha KWS, (W) Blazen					5
	medium to long	moyenne à longue	mittel bis lang	media a larga						6
	long	longue	lang	larga	(S) PR46H75, (W) PT275					7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga						8
	very long	très longue	sehr lang	muy larga						9
<b>20.</b>	<b>QN</b>	<b>MS</b>	<b>(c)</b>	<b>75-89</b>						
	<b>Silique: width</b>	<b>Silique : largeur</b>	<b>Schote: Breite</b>	<b>Silicua: anchura</b>						
	very narrow	très étroite	sehr schmal	muy estrecha						1
	very narrow to narrow	très étroite à étroite	sehr schmal bis schmal	muy estrecha a estrecha						2
	narrow	étroite	schmal	estrecha	(S) Joscha KWS, (W) PR44D06					3
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media						4
	medium	moyenne	mittel	media	(S) Sunder, (W) Severino KWS					5
	medium to broad	moyenne à large	mittel bis breit	media a ancha						6
	broad	large	breit	ancha	(S) Lancia, (W) PT296					7
	broad to very broad	large à très large	breit bis sehr breit	ancha muy ancha						8
	very broad	très large	sehr breit	muy ancha						9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>21.</b>	<b>QN</b>	<b>MS</b>	<b>(c)</b>	<b>75-89</b>		
	<b>Siliqua: ratio length/width</b>	<b>Siliqua : rapport longueur/largeur</b>	<b>Schote: Verhältnis Länge/Breite</b>	<b>Silicua: relación longitud/anchura</b>		
	very low	très bas	sehr klein	muy baja		1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja		2
	low	bas	klein	baja	(S) R501S11, (W) ICR 166	3
	low to medium	bas à moyen	klein bis mittel	baja a media		4
	medium	moyen	mittel	media	(S) Joscha KWS, (W) Kaban	5
	medium to high	moyen à élevé	mittel bis groß	media a alta		6
	high	élevé	groß	alta	(S) PR46H75, (W) RNX5621	7
	high to very high	élevé à très élevé	groß bis sehr groß	alta a muy alta		8
	very high	très élevé	sehr groß	muy alta		9
<b>22.</b>	<b>QN</b>	<b>MS</b>	<b>(c)</b>	<b>75-89</b>		
	<b>Siliqua: length of beak</b>	<b>Siliqua : longueur du bec</b>	<b>Schote: Länge der Spitze</b>	<b>Silicua: longitud de la punta</b>		
	very short	très courte	sehr kurz	muy corta		1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta		2
	short	courte	kurz	corta	(S) R104D NHT, (W) ICR 166	3
	short to medium	courte à moyenne	kurz bis mittel	corta a media		4
	medium	moyenne	mittel	media	(S) Jazz KWS, (W) WRG 1501	5
	medium to long	moyenne à longue	mittel bis lang	media a larga		6
	long	longue	lang	larga	(S) SW 0928725A, (W) MSL 107 C	7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga		8
	very long	très longue	sehr lang	muy larga		9



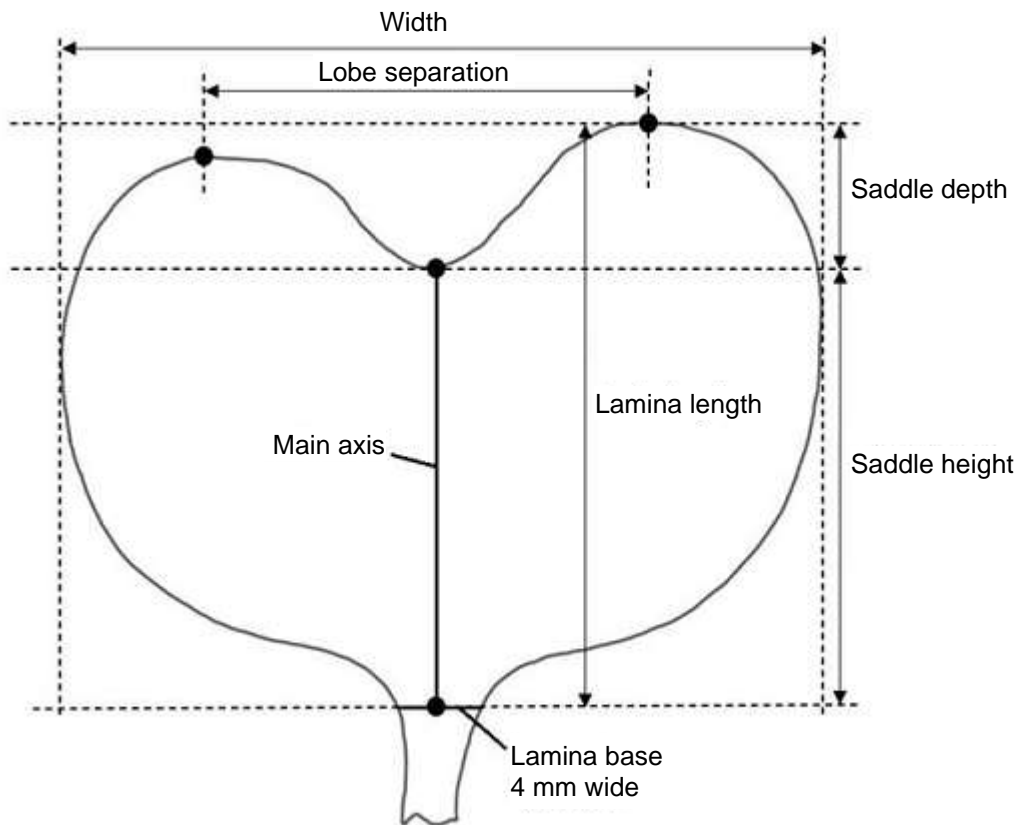
	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>23.</b>	<b>QN</b>	<b>MS</b>	<b>(c)</b>	<b>75-89</b>		
	<b>Siliqua: length of pedicel</b>	<b>Siliqua : longueur du pédicelle</b>	<b>Schote: Länge des Stiels</b>	<b>Silicua: longitud del pedicelo</b>		
	very short	très courte	sehr kurz	muy corta		1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta		2
	short	courte	kurz	corta	(S) PA4EN171, (W) MSL 315 C	3
	short to medium	courte à moyenne	kurz bis mittel	corta a media		4
	medium	moyenne	mittel	media	(S) Joscha KWS, (W) AH 12	5
	medium to long	moyenne à longue	mittel bis lang	media a larga		6
	long	longue	lang	larga	(S) Jazz KWS, (W) PT297	7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga		8
	very long	très longue	sehr lang	muy larga		9
<b>24.</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>			
	<b>Tendency to form inflorescences in alternate season</b>	<b>Tendance à former des inflorescences en saison alternée</b>	<b>Neigung zur Bildung von Blütenständen in Wechselfaat</b>	<b>Tendencia a formar inflorescencias en alternancia</b>		
	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	(S) SRR 36112 CL, (W) PX131	1
	very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil		2
	weak	faible	gering	débil	(S) D 271310, (W) Blazen	3
	weak to medium	faible à moyenne	gering bis mittel	débil a media		4
	medium	moyenne	mittel	media	(S) MSL 554 C, (W) Aardvark	5
	medium to strong	moyenne à forte	mittel bis stark	media a fuerte		6
	strong	forte	stark	fuerte	(S) Jazz KWS, (W) AH 12	7
	strong to very strong	forte à très forte	stark bis sehr stark	fuerte a muy fuerte		8
	very strong	très forte	sehr stark	muy fuerte	(S) MSL 545 C, (W) Severino KWS	9

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

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

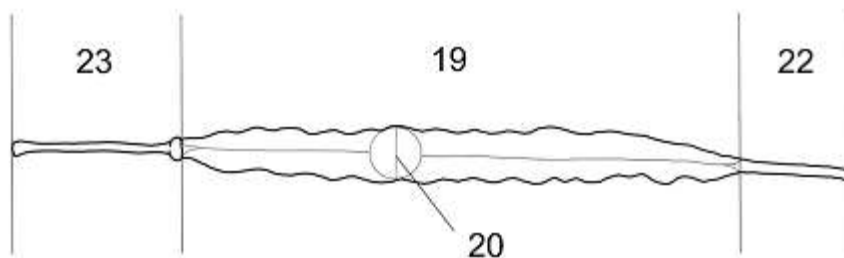
(a)



Observations should be made on cotyledons of 40 seedlings. If the two cotyledons differ in size, the biggest one should be measured.

(b) Observations should be made on the largest, fully expanded leaf from the lower part of the plant showing no indication of senescence.

(c)



- Ch. 19 - Silique: length
- Ch. 20 - Silique: width
- Ch. 22 - Silique: length of beak
- Ch. 23 - Silique: length of pedicel

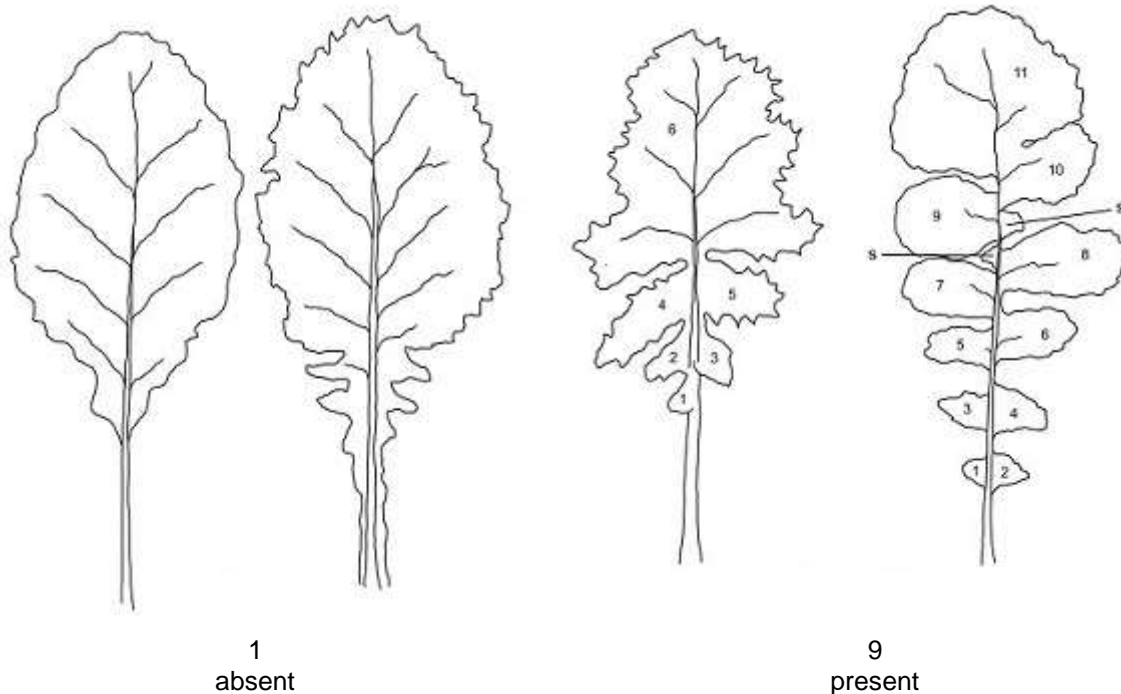
Observations should be made on siliques from the middle of the inflorescence of the main stem.

## 8.2 Explanations for individual characteristics

### Ad. 1: Seed: erucic acid

The erucic acid content should be observed on seed submitted by the applicant. It should be expressed as a percentage by mass of methyl esters in accordance with the ISO standard in document 12966-4 2015, paragraph 6.2.2.1. Seed containing 2.0% or less would be classified as “low” whereas seed containing more than 2.0% would be classified as “high”. Any alternative method may be used if it gives the same result.

### Ad. 9: Leaf: lobes



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 structures (indicated by an “s”) are not counted.

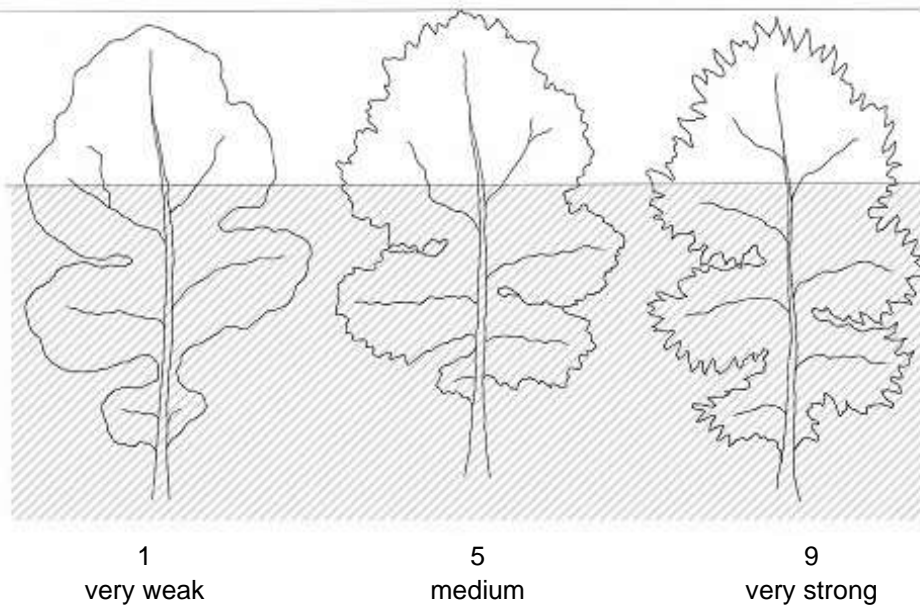
### Ad. 10: Leaf: number of lobes

See Ad. 9

Observations can only be made on varieties with Leaf: lobes: present.

Ad. 11: Leaf: incisions of margin

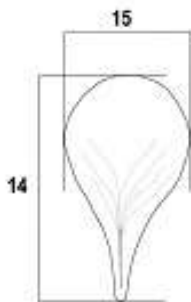
Observations should be made on the upper third of the leaf.



Ad. 12: Time of flowering

When assessed on whole plots, time of flowering is reached when 10% of all plants have at least one flower open. When assessed on individual plants, time of flowering is reached when 50% of all plants have at least one flower open.

Ad. 14: Flower: length of petals



Ch. 14 - Flower: length of petals  
Ch. 15 - Flower: width of petals

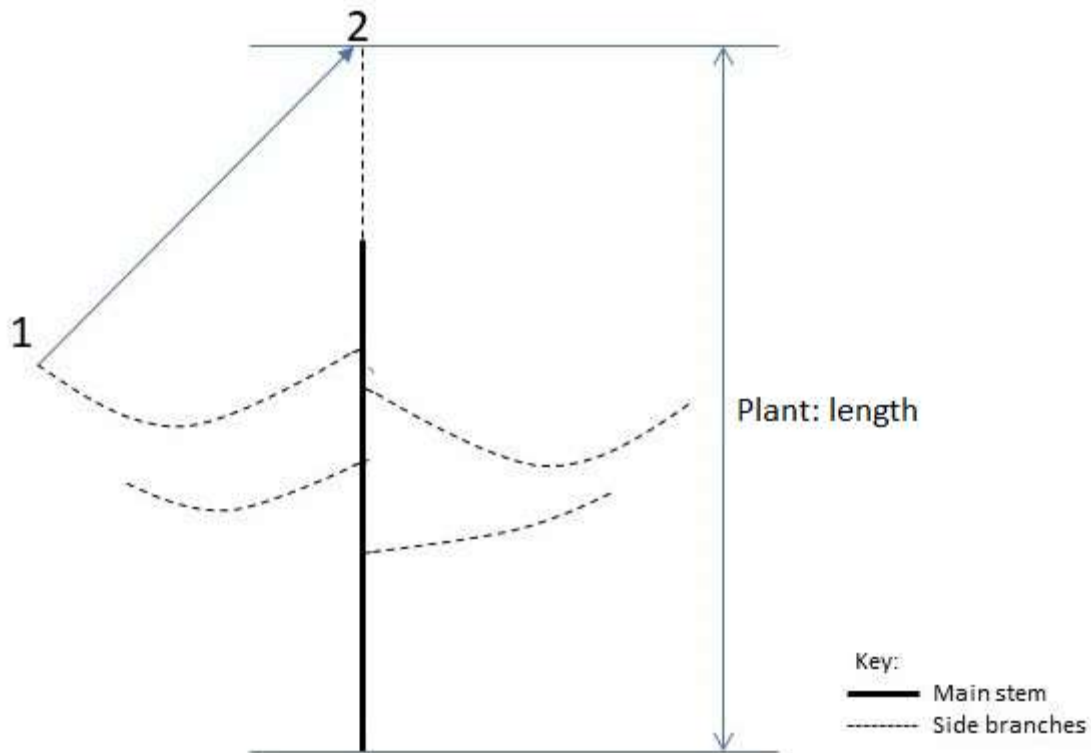
Ad. 15: Flower: width of petals

See Ad. 14

Ad. 16: Flower: ratio length/width of petals

See Ad. 14

Ad. 18: Plant: length



To measure the length, all side branches should be raised to vertical orientation (position 1 to 2). The measurement should be taken from the base of the plant to the tip of the longest branch.

Ad. 24: Tendency to form inflorescences in alternate season

Tendency to form inflorescence in alternate season should be assessed from the growth stage reached in relation to example varieties. For winter oilseed rape varieties, observations should be made in summer when late spring oilseed rape varieties are flowering (on spring sown plots). For spring oilseed rape varieties, observations should be made in autumn, when their development stagnates (late summer sown plots).

8.3 *Phenological growth stages and BBCH-identification keys of oilseed rape (Brassica napus L. ssp. napus)*

**Principal growth stage 0: Germination**

- 00 Dry seed
- 01 Beginning of seed imbibition
- 03 Seed imbibition complete
- 05 Radicle emerged from seed
- 07 Hypocotyl with cotyledons emerged from seed
- 08 Hypocotyl with cotyledons growing towards soil surface
- 09 Emergence: cotyledons emerge through soil surface

**Principal growth stage 1: Leaf development**

- 10 Cotyledons completely unfolded
- 11 First leaf unfolded
- 12 2 leaves unfolded
- 13 3 leaves unfolded
- 1- Stages continuous until...
- 19 9 or more leaves unfolded

*Stem elongation may occur earlier than stage 19; in this case continue with stage 20.*

**Principal growth stage 2: Formation of side shoots**

- 20 No side shoots
- 21 Beginning of side shoot development: first side shoot detectable
- 22 2 side shoots detectable
- 23 3 side shoots detectable
- 2- Stages continuous until...
- 29 End of side shoot development: 9 or more side shoots detectable

**Principal growth stage 3: Stem elongation**

- 30 Beginning of stem elongation: no internodes ("rosette")
- 31 1 visibly extended internode
- 32 2 visibly extended internodes
- 33 3 visibly extended internodes
- 3- Stages continuous until...
- 39 9 or more visibly extended internodes

*Visibly extended internode "n" develops between leaf "n" and leaf "n+1"*

**Principle growth stage 4: does not apply**

**Principal growth stage 5: Inflorescence emergence**

- 50 Flower buds present, still enclosed by leaves
- 51 Flower buds visible from above ("green bud")
- 52 Flower buds free, level with the youngest leaves
- 53 Flower buds raised above the youngest leaves
- 55 Individual flower buds (main inflorescence) visible but still closed
- 57 Individual flower buds (secondary inflorescences) visible but still closed
- 59 First petals visible, flower buds still closed ("yellow bud")

**Principal growth stage 6: Flowering**

- 60 First flowers open
- 61 10% of flowers on main raceme open, main raceme elongating
- 62 20% of flowers on main raceme open
- 63 30% of flowers on main raceme open
- 64 40% of flowers on main raceme open
- 65 Full flowering: 50% flowers on main raceme open, older petals falling
- 67 Flowering declining: majority of petals fallen
- 69 End of flowering Principal growth stage

**Principal growth stage 7: Development of fruit**

- 71 10% of pods have reached final size
- 72 20% of pods have reached final size
- 73 30% of pods have reached final size
- 74 40% of pods have reached final size
- 75 50% of pods have reached final size
- 76 60% of pods have reached final size
- 77 70% of pods have reached final size
- 78 80% of pods have reached final size
- 79 Nearly all pods have reached final size

**Principal growth stage 8: Ripening**

- 80 Beginning of ripening: seed green, filling pod cavity
- 81 10% of pods ripe, seeds dark and hard
- 82 20% of pods ripe, seeds dark and hard
- 83 30% of pods ripe, seeds dark and hard
- 84 40% of pods ripe, seeds dark and hard
- 85 50% of pods ripe, seeds dark and hard
- 86 60% of pods ripe, seeds dark and hard
- 87 70% of pods ripe, seeds dark and hard
- 88 80% of pods ripe, seeds dark and hard
- 89 Fully ripe: nearly all pods ripe, seeds dark and hard

**Principal growth stage 9: Senescence**

- 97 Plant dead and dry
- 99 Harvested product

9. Literature

Growth stage key adapted from:

2001: Growth stages of mono-and dicotyledonous plants. BBCH Monograph 2nd Edition. Federal Biological Research Centre for Agriculture and Forestry.

10. Technical Questionnaire

		Application date: (not to be filled in by the applicant)
<b>TECHNICAL QUESTIONNAIRE</b> 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	Botanical name	<input type="text" value="Brassica napus L. ssp. napus"/>
1.2	Common name	<input type="text" value="Oilseed Rape, Rapeseed, Swede Rape, Canola"/>
2.	Applicant	
	Name	<input type="text"/>
	Address	<input type="text"/>
	Telephone No.	<input type="text"/>
	Fax No.	<input type="text"/>
	E-mail address	<input type="text"/>
	Breeder (if different from applicant)	<input type="text"/>
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 variety)  
(.....) x (.....)  
female parent male parent

(b) partially known cross [ ]  
(please state known parent variety(ies))  
(.....) x (.....)  
female parent male parent

(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)

# 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).

Characteristics	Example Varieties	Note
<b>5.1 Seed: erucic acid (1)</b>		
low	(S) Lagoon, (W) Severino KWS	1 [ ]
high	(S) Petranova, (W) Greenland, (W) MSL049C12	9 [ ]
<b>5.2 Leaf: glaucosity (8)</b>		
absent		1 [ ]
present	(S) Proximo, (W) Architect	9 [ ]
<b>5.3 Leaf: lobes (9)</b>		
absent	(S) MSL 545 C, (W) Greenland	1 [ ]
present	(S) Proximo, (W) Blazen	9 [ ]
<b>5.4 Time of flowering (12)</b>		
very early	(W) Kaban	1 [ ]
very early to early		2 [ ]
early	(S) Brander, (W) DK Expansion	3 [ ]
early to medium		4 [ ]
medium	(S) Jangle KWS, (W) Kadore	5 [ ]
medium to late		6 [ ]
late	(S) MSL 554 C, (W) Akela	7 [ ]
late to very late		8 [ ]
very late	(W) Greenland	9 [ ]
<b>5.5 Flower: color of petals (13)</b>		
white	(W) Witt	1 [ ]
yellowish white	(S) Silvershadow, (W) Greenland	2 [ ]
yellow	(S) Proximo, (W) Severino KWS	3 [ ]
orange yellow		4 [ ]
<b>5.6 Production of pollen (17)</b>		
absent	(S) MSL 554 C, (W) MSL049C12	1 [ ]
present	(S) Proximo, (W) PT256	9 [ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
<b>5.7 Plant: length (18)</b>		
very short		1 [ ]
very short to short		2 [ ]
short	(S) MSL 545 C, (W) PX131	3 [ ]
short to medium		4 [ ]
medium	(S) Jazz KWS, (W) Skye	5 [ ]
medium to long		6 [ ]
long	(S) D 271310, (W) Annapolis	7 [ ]
long to very long		8 [ ]
very long		9 [ ]

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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 <b>similar</b> variety(ies)	Describe the expression of the characteristic(s) for <b>your</b> candidate variety
<i>Example</i>	<i>Time of flowering</i>	<i>early</i>	<i>medium</i>
Comments:			

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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

7.3.1 Seasonal type:

Winter [ ]

Spring [ ]

Alternative (grown in winter or spring) [ ]

7.3.2 Use:

Forage [ ]

Oil [ ]

7.3.3 In case of male sterility:

Genetic Male Sterility (GMS) [ ]

Cytoplasmic Male Sterility (CMS) [ ]

7.3.4 Other:

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

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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.

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 <input type="checkbox"/>	No <input type="checkbox"/>
(b) Chemical treatment (e.g. growth retardant, pesticide)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
(c) Tissue culture	Yes <input type="checkbox"/>	No <input type="checkbox"/>
(d) Other factors	Yes <input type="checkbox"/>	No <input type="checkbox"/>

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

Signature  Date

[End of document]