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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

RAPE SEED

UPOV Code(s): BRASS_NAP_NUS

Brassica napus L. *oleifera*

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from the United Kingdom
to be considered by the
Technical Working Party for Agricultural Crops
at its fifty-first session, to be held in Cambridge, United Kingdom,
from 2022-05-23 to 2022-05-27

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Brassica napus L. *oleifera*	Oilseed Rape, Rapeseed, Swede Rape, Canola	Colza	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), 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. *oleifera*.

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: 100g

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.

3.4 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 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 10)
(c) Time of flowering (characteristic 13)
(d) Flower: color of petals (characteristic 14)
(e) Production of pollen (characteristic 18)
(f) Plant: total length (characteristic 19)

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

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

6.5 Legend

	English	français	deutsch	español	Example Varieties Exemples Be ejemplo	Note
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)-(b) 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
1.	**(*)**	**QL MG**	**(+)**	**00**			
		Seed: erucic acid					
		low				DK Cabernet	1
		high				Greenland	9
2.		**QN MS**	**(+) (a)**	**15-17**			
		Cotyledon: ratio saddle length/width					
		very low					1
		very low to low					2
		low				Severino KWS	3
		low to medium					4
		medium				DK Expansion	5
		medium to high					6
		high				Unicorn	7
		high to very high					8
		very high					9
3.		**QN MS**		**15-17**			
		Cotyledon: saddle depth					
		very small					1
		very small to small					2
		small				Unicorn	3
		small to medium					4
		medium				Blazen	5
		medium to large					6
		large				WRG 1501	7
		large to very large					8
		very large					9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4.	**QN MS**	**(+) (a)**	**15-17**			
	Cotyledon: ratio lobe separation/width					
	very low					1
	very low to low					2
	low				WRG 1501	3
	low to medium					4
	medium				PT256	5
	medium to high					6
	high				DK Expansion	7
	high to very high					8
	very high					9
5.	**QN MS**	**(a)**	**15-17**			
	Cotyledon: ratio lobe separation/saddle depth					
	very low					1
	very low to low					2
	low					3
	low to medium					4
	medium					5
	medium to high					6
	high					7
	high to very high					8
	very high					9
6.	**QN MS**	**(a)**	**15-17**			
	Cotyledon: ratio lamina base to wide point/width					
	very low					1
	very low to low					2
	low				Severino KWS	3
	low to medium					4
	medium				DK Expansion	5
	medium to high					6
	high				AH 12	7
	high to very high					8
	very high					9

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
7.		**QN**	**MS**		**(a)**	**15-17**			
		Cotyledon: ratio saddle length/ lamina length							
		very low							1
		very low to low							2
		low						PX131	3
		low to medium							4
		medium						DK Expansion	5
		medium to high							6
		high						Architect	7
		very high to high							8
		very high							9
8.	**(*)**	**QN**	**VG**			**23-27**			
		Leaf: intensity of green color							
		very weak							1
		very weak to weak							2
		weak						Swift Utility	3
		weak to medium							4
		medium						Architect	5
		medium to strong							6
		strong						Kadore	7
		strong to very strong							8
		very strong							9
9.	**(*)**	**QL**	**VG**			**23-27**			
		Leaf: glaucosity							
		absent							1
		present						Architect	9
10	**(*)**	**QL**	**VG**	**(+)**		**23-27**			
		Leaf: lobes							
		absent						Greenland	1
		present						Blazen	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11	**(*)**	**QN MS/VG**	**(+)**	**23-27**			
		Only for varieties with Leaf: lobes: present: **Leaf: number of lobes**					
		very few					1
		very few to few					2
		few				Skye	3
		few to medium					4
		medium				Blazen	5
		medium to many					6
		many				Architect	7
		many to very many					8
		very many					9
12	**(*)**	**QN VG**	**(+)**	**23-27**			
		Leaf: dentation of margin					
		very weak					1
		very weak to weak					2
		weak				Aardvark	3
		weak to medium					4
		medium				Blazen	5
		medium to strong					6
		strong				Severino KWS	7
		strong to very strong					8
		very strong					9
13	**(*)**	**QN MG/MS**	**(+)**				
		Time of flowering					
		very early				DK Excursion	1
		very early to early					2
		early				DK Expansion	3
		early to medium					4
		medium				Kadore	5
		medium to late					6
		late				Akela	7
		late to very late					8
		very late				Greenland	9

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14	**(*)**	**PQ**	**VG**			**62-63**			
		Flower: color of petals							
		white						Witt	1
		cream						Greenland	2
		yellow						PT282	3
		orange-yellow							4
15		**QN**	**MS/VG**			**62-63**			
		Flower: length of petals							
		very short							1
		very short to short							2
		short						CS 272	3
		short to medium							4
		medium						Blazen	5
		medium to long							6
		long						PR44D06	7
		long to very long							8
		very long							9
16		**QN**	**MS/VG**			**62-63**			
		Flower: width of petals							
		very narrow							1
		very narrow to narrow							2
		narrow							3
		narrow to medium							4
		medium						PT256	5
		medium to broad							6
		broad						V 140 OL	7
		broad to very broad							8
		very broad							9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17		**QN MS/VG**	**(+)**	**62-63**			
		Flower: ratio length/width of petals					
		very low					1
		very low to low					2
		low				DK Expansion	3
		low to medium					4
		medium				PT282	5
		medium to high					6
		high				Unicorn	7
		high to very high					8
		very high					9
18	**(*)**	**QL VG**		**62-63**			
		Production of pollen					
		absent				CS 272	1
		present				PT256	9
19	**(*)**	**QN MG/MS**	**(+)**	**70-80**			
		Plant: total length					
		very short					1
		very short to short					2
		short				PX131	3
		short to medium					4
		medium				Skye	5
		medium to long					6
		long				Annapolis	7
		long to very long					8
		very long					9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20	**QN MS**	**(b)**	**75-89**			
	Silique: length					
	very short					1
	very short to short					2
	short				Architect	3
	short to medium					4
	medium				Blazen	5
	medium to long					6
	long				PT275	7
	long to very long					8
	very long					9
21	**QN MS**	**(b)**	**75-89**			
	Silique: width					
	very narrow					1
	very narrow to narrow					2
	narrow				PR44D06	3
	narrow to medium					4
	medium				PT282	5
	medium to broad					6
	broad				PT296	7
	broad to very broad					8
	very broad					9
22	**QN MS**	**(b)**	**75-89**			
	Silique: ratio length/width					
	very low					1
	very low to low					2
	low				ICR 166	3
	low to medium					4
	medium				DK Excursion	5
	medium to high					6
	high				RNX5621	7
	high to very high					8
	very high					9

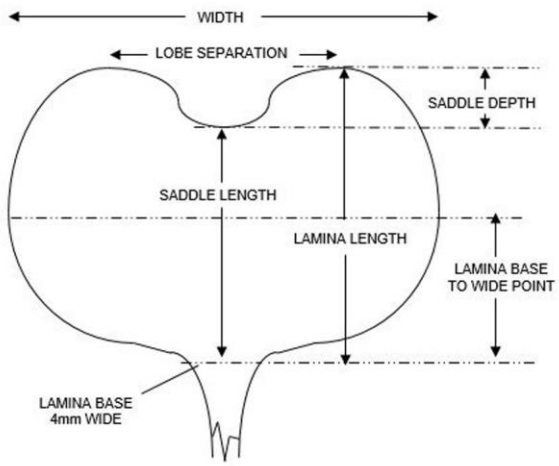
	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
23	**QN MS**	**(b)**	**75-89**			
	Silique: length of beak					
	very short					1
	very short to short					2
	short				ICR 166	3
	short to medium					4
	medium				Architect	5
	medium to long					6
	long				MSL 107 C	7
	long to very long					8
	very long					9
24	**QN MS**	**(b)**	**75-89**			
	Silique: length of pedicel					
	very short					1
	very short to short					2
	short				DK Cabernet	3
	short to medium					4
	medium				AH 12	5
	medium to long					6
	long				PT297	7
	long to very long					8
	very long					9
25	**QN VG**	**(+)**				
	Tendency to form inflorescences when sown in alternate season					
	absent or very weak				DK Cabernet	1
	very weak to weak					2
	weak				Blazen	3
	weak to medium					4
	medium				Aardvark	5
	medium to strong					6
	strong				AH 12	7
	strong to very strong					8
	very strong				Severino KWS	9

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

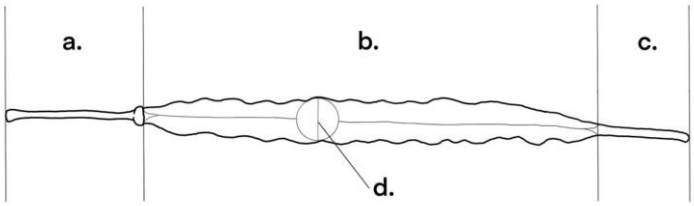
Characteristics containing the following key in the Table of Characteristics should be examined as indicated below:

(a)



The measurements should be taken on cotyledons of 40 seedlings. If the two cotyledons differ in size, the biggest one should be measured.

(b)



a, Length of pedicel
b. Silique length
c. Length of beak
d. Silique width

Observations on the silique should be recorded in the midpart 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% or less would be classified as "low" whereas seed containing more than 2% would be classified as "high". Any alternative method may be used if it gives the same result.

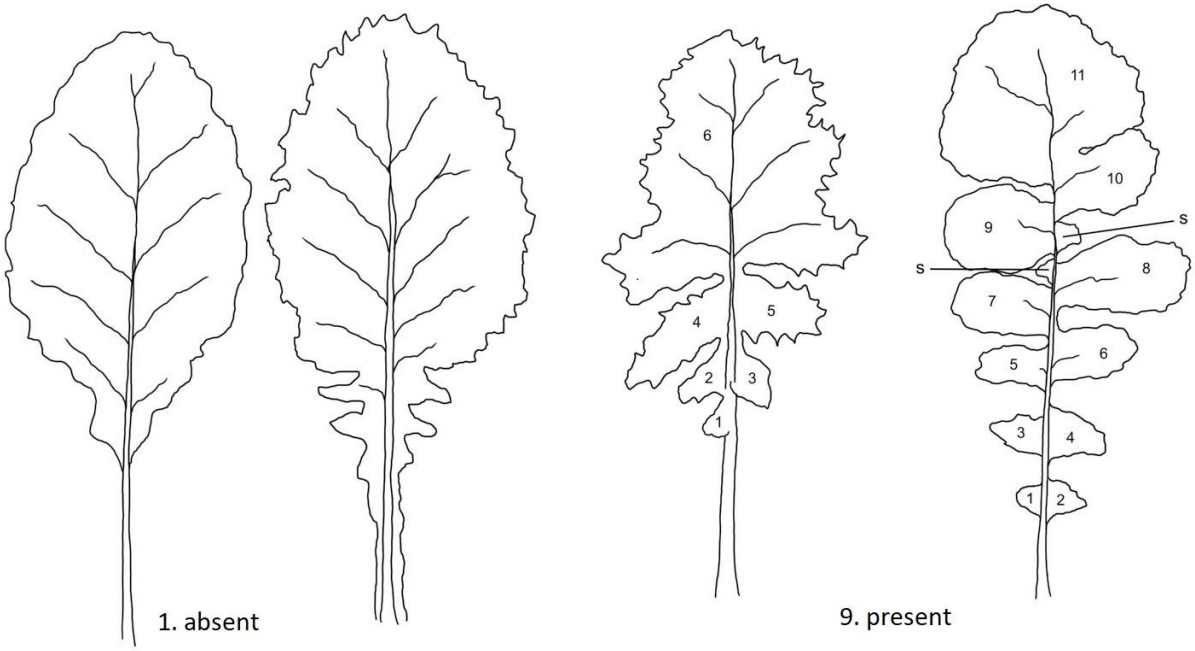
Ad. 2: Cotyledon: ratio saddle length/width

Saddle length is defined as the distance between the inclination at top of the cotyledon and the point where the width of the petiole is about 4 mm.

Ad. 4: Cotyledon: ratio lobe separation/width

Lobe separation should be measured between the two highest points on each lobe.

Ad. 10: Leaf: lobes



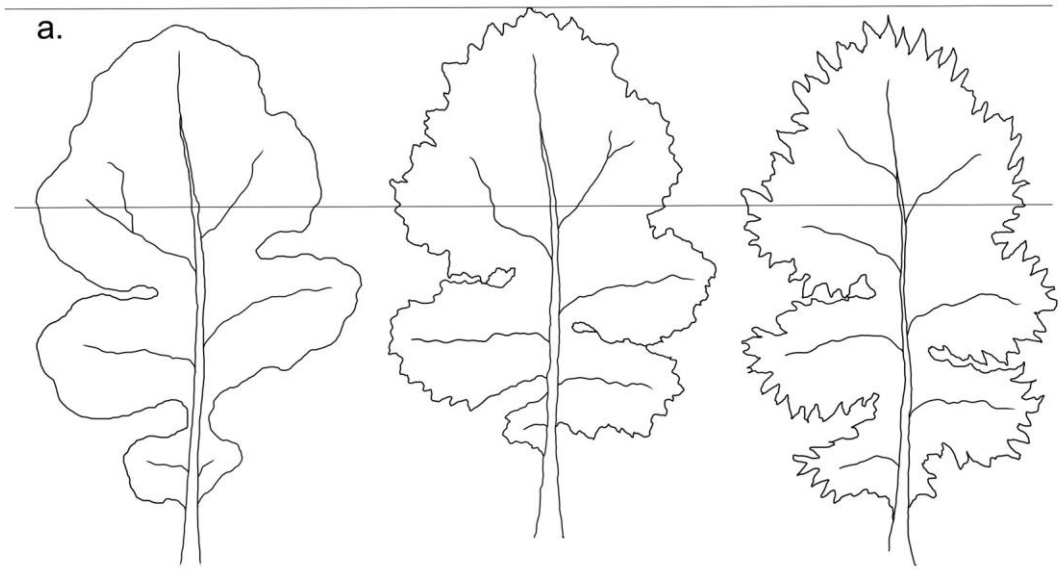
Observations on the leaf should be made on the largest, fully expanded leaf from the lower part of the plant showing no indication of senescence.

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 lobe(s) are not counted.

Ad. 11: Only for varieties with Leaf: lobes: present: Leaf: number of lobes

See explanation in Ad. 10.

Ad. 12: Leaf: dentation of margin

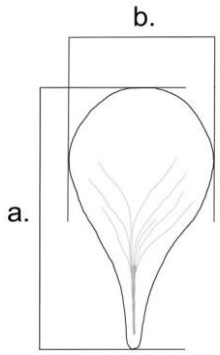


a. denotes the leaf area in which dentation should be assessed.

Ad. 13: Time of flowering

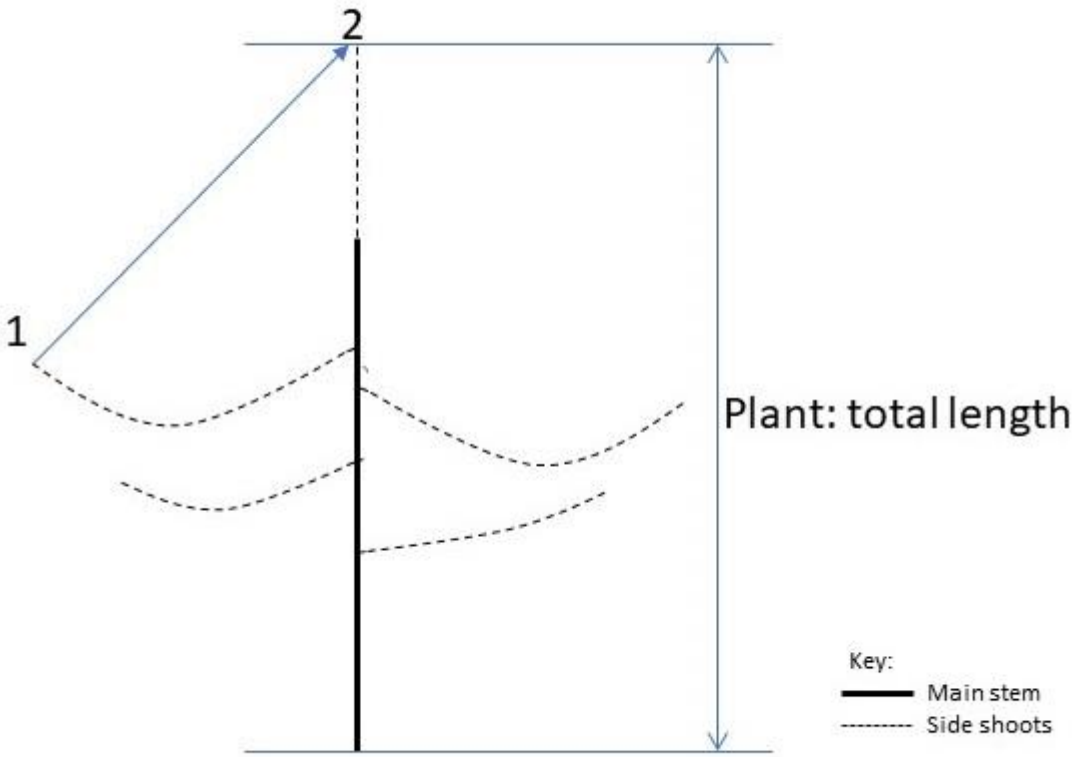
The observation should be done at least three times per week and more frequently if there is any need to do so. A plant is at flowering when one flower is fully open. When assessing on the plot as a whole, the time of flowering should be recorded when 10% of plants have reached this stage. When assessed on individual plants, time of flowering is reached when 50% of plants have reached this stage.

Ad. 17: Flower: ratio length/width of petals



Petal length (a.) and width (b.) are used to calculate or observe Flower: ratio length/width of petals.

Ad. 19: Plant: total length



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

Ad. 25: Tendency to form inflorescences when sown in alternate season

Calculations should be made from the growth stage reached in relation to example varieties. For winter rape varieties, the growth stage should be observed in summer when late spring rape varieties are flowering (on spring sown plots). For spring 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

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

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

	Application date: (not to be filled in by the applicant)

TECHNICAL QUESTIONNAIRE
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	*Brassica napus* L. *oleifera*
1.2	Common name	Oilseed Rape, Rapeseed, Swede Rape, Canola

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	
Breeder (if different from applicant)	

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

#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 [ ]

(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 [ ] Hybrid [ ]

[ ] GMS

[ ] CMS

[ ] Other - please specify

4.1.5 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:

4.2 Method of propagating the variety

4.2.1 Other [ ]
(Please provide details)

In the case of hybrid varieties the production scheme for the hybrid should be provided on a separate sheet. This should provide details of all the parent lines required for propagating the hybrid e.g.

Single Hybrid

(……..……..…) x (……..……..…)

female parent male parent

Three-Way Hybrid

(……..……..…) x (……..……..…)

female parent male parent

(……..……..…) x (……..……..…)

single hybrid used as female parent male parent

and should identify in particular:

(a) any male sterile lines

(b) maintenance system of male sterile lines.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

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
5.1 (1)	**Seed: erucic acid**		
	low	DK Cabernet	1 [ ]
	high	Greenland	9 [ ]
5.2 (9)	**Leaf: glaucosity**		
	absent		1 [ ]
	present	Architect	9 [ ]
5.3 (10)	**Leaf: lobes**		
	absent	Greenland	1 [ ]
	present	Blazen	9 [ ]
5.4 (13)	**Time of flowering**		
	very early	DK Excursion	1 [ ]
	very early to early		2 [ ]
	early	DK Expansion	3 [ ]
	early to medium		4 [ ]
	medium	Kadore	5 [ ]
	medium to late		6 [ ]
	late	Akela	7 [ ]
	late to very late		8 [ ]
	very late	Greenland	9 [ ]
5.5 (14)	**Flower: color of petals**		
	white	Witt	1 [ ]
	cream	Greenland	2 [ ]
	yellow	PT282	3 [ ]
	orange-yellow		4 [ ]
5.6 (18)	**Production of pollen**		
	absent	CS 272	1 [ ]
	present	PT256	9 [ ]

	Characteristics	Example Varieties	Note
5.7 (19)	**Plant: total length**		
	very short		1 [ ]
	very short to short		2 [ ]
	short	PX131	3 [ ]
	short to medium		4 [ ]
	medium	Skye	5 [ ]
	medium to long		6 [ ]
	long	Annapolis	7 [ ]
	long to very long		8 [ ]
	very long		9 [ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

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 **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example	*Time of flowering*	*early*	*medium*

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

[#]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 [ ]

7.3.2 Use:
Forage [ ]
Oil [ ]

7.3.3 Other:

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

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 [ ]	No [ ]
(b)	Chemical treatment (e.g. growth retardant, pesticide)	Yes [ ]	No [ ]
(c)	Tissue culture	Yes [ ]	No [ ]
(d)	Other factors	Yes [ ]	No [ ]

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]