

**TWA/29/2****ORIGINAL:** English**DATE:** December 14, 1999

**INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS**  
GENEVA

**TECHNICAL WORKING PARTY  
FOR  
AGRICULTURAL CROPS**

**Twenty-Ninth Session  
Landskrona, Sweden, February 10 and 11, 2000**

**WORKING PAPER ON DRAFT TEST GUIDELINES FOR TURNIP RAPE**  
*(Brassica Rapa L.)*

*Document prepared by experts from Finland*

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## I. Subject of these Guidelines

These Test Guidelines apply to all varieties of *Brassica rapa* L. excluding varieties with swollen root.

## II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the seed required for testing the variety is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must 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:

200 g.

In the case of hybrids and synthetic varieties a minimum of 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. The plant material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

## III. Conduct of Tests

1. The minimum duration of tests should normally be two similar growing periods.

2. The tests should normally be conducted at one place. If any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.

3. The 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 the plants may be removed for measurements and counting without prejudice to the observations which must be made up to the end of the growing period. As a minimum, each test should include a total of:

1000 plants fodder turnip rape and autumn sown oilseed turnip rape  
500 plants spring sown oilseed turnip rape

which should be divided between 2 or more replicates. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Additional tests for special purposes may be established.

#### IV. Methods and Observations

1. Unless otherwise indicated, in the case of plant-by-plant assessment of distinctness and uniformity, all observations determined by measurements or counting should be made on 60 plants or parts of 60 plants. Interpretation of results should be made according to the rules for cross-pollinated species as laid down in the General Introduction to DUS Tests. For the assessment of uniformity of parental lines and single hybrids - if not otherwise indicated - a population standard of 2% with an acceptance probability of at least 95% should be applied. In view of uniformity of open-pollinated varieties and other hybrids than single hybrids the variability within the variety should not exceed the variability of comparable varieties already known.

2. In the case of visual assessment of distinctness and uniformity by a single observation of a group of plants or parts of plants, observations should be made on 1000 plants or parts of 1000 plants (Spring Turnip Rape) or on 500 plants or parts of 500 plants (Fodder Turnip Rape and Autumn sown Oilseed Turnip Rape). For the assessment of uniformity of parental lines and single hybrids - if not otherwise indicated - a population standard of 0.5% with an acceptance probability of at least 95 % should be applied. In view of uniformity of open-pollinated varieties and other hybrids than single hybrids the variability within the variety should not exceed the variability of comparable varieties already known.

3. Unless otherwise indicated, all observations on the foliage should be made on fully developed leaves (4th to 6th rosette leaf) which show no sign of senescence.

4. Unless otherwise indicated, all observations on siliquas should be made on the first fully developed siliqua from below on the main stem.

#### V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. Characters which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within the variety. Their various states of expression should be fairly evenly distributed throughout the collection.

2. It is recommended that the competent authorities use the following characteristics for grouping varieties:

- i) Ploidy (characteristic 2)
- ii) Flower: color of petals (characteristic 25)
- iii) Tendency to form inflorescences in year of sowing from spring sown trials (characteristic 20)
- iv) Tendency to form inflorescences in year after sowing from autumn sown trials (characteristic 22)
- v) Time of flowering in year of sowing for spring sown trials (characteristic 23)
- vi) Time of flowering in year after year of sowing for autumn sown trials (characteristic 24).

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.

2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of expression for each characteristic.

3. Legend

(\*) Characteristics that should be used on all varieties in every growing period over which the examinations are made and always be included in the variety descriptions, except when the state of expression of a preceding characteristics 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. Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres

	Stage <sup>1)</sup> Stade <sup>1)</sup> Stadium <sup>1)</sup> Estado <sup>1)</sup>	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>1.</b>	<b>00</b>	<b>Seed: erucic acid</b>					
(+)		absent					1
		present					9
<b>2.</b>		<b>Ploidy</b>					
(*)		diploid					2
		tetraploid					4
<b>3.</b>	<b>17-19</b>	<b>Cotyledon: length</b>					
(+)		short					3
		medium					5
		long					7
<b>4.</b>	<b>17-19</b>	<b>Cotyledon: width</b>					
(+)		narrow					3
		medium					5
		broad					7
<b>5.</b>	<b>17-19</b>	<b>First leaf: hairiness on margin</b>					
		sparse					3
		medium					5
		dense					7
<b>6.</b>	<b>21-23</b>	<b>Leaf: attitude</b>					
		erect					1
		semi-erect					3
		horizontal					5

	Stage <sup>1)</sup> Stade <sup>1)</sup> Stadium <sup>1)</sup> Estado <sup>1)</sup>	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>7.</b> (+)	<b>21-23</b>	<b>Leaf: reflexion of top</b>					
		weak					3
		medium					5
		strong					7
<b>8.</b> (* )	<b>21-23</b>	<b>Leaf: green color</b>					
		pale					3
		medium					5
		dark					7
<b>9.</b> (+)	<b>21-23</b>	<b>Leaf: frequency of plants with lobed leaves</b>					
		absent or very low					1
		low					3
		medium					5
		high					7
		very high					9
<b>10.</b> (+)	<b>21-23</b>	<b>Leaf: number of lobes (varieties with high frequency of plants with lobed leaves)</b>					
		few					3
		medium					5
		many					7

	Stage <sup>1)</sup> Stade <sup>1)</sup> Stadium <sup>1)</sup> Estado <sup>1)</sup>	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>11.</b> (+)	<b>21-23</b>	<b>Leaf: incisions of blade (varieties with low frequency of plants with lobed leaves)</b>					
		weak					3
		medium					5
		strong					7
<b>12.</b>	<b>21-23</b>	<b>Leaf: undulation of margin</b>					
		weak					3
		medium					5
		strong					7
<b>13.</b> (+)	<b>21-23</b>	<b>Leaf: dentation of margin</b>					
		weak					3
		medium					5
		strong					7
<b>14.</b> (+)	<b>21-23</b>	<b>Leaf: length (blade and petiole)</b>					
		short					3
		medium					5
		long					7
<b>15.</b> (+)	<b>21-23</b>	<b>Leaf: width (widest point)</b>					
		narrow					3
		medium					5
		broad					7



	Stage <sup>1)</sup> Stade <sup>1)</sup> Stadium <sup>1)</sup> Estado <sup>1)</sup>	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>16.</b>	<b>21-23</b>	<b>Leaf: hairiness of upper side</b>					
		sparse					3
		medium					5
		dense					7
<b>17.</b>		<b>Plant: upper stem pigmentation (spring sown varieties only)</b>					
		weak					3
		medium					5
		strong					7
<b>18.</b>		<b>Plant: basal stem pigmentation (winter sown varieties only)</b>					
		weak					3
		medium					5
		strong					7
<b>19.</b>	<b>61</b>	<b>Plant: height at first flowering</b>					
		short					3
		medium					5
		tall					7

Stage <sup>1)</sup> Stade <sup>1)</sup> Stadium <sup>1)</sup> Estado <sup>1)</sup>	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note / Nota
<b>20. (*)</b>	<b>Tendency to form inflorescences in year of sowing for spring sown trials</b>					
	absent or very weak					1
	weak					3
	medium					5
	strong					7
	very strong					9
<b>21. (*)</b>	<b>Tendency to form inflorescences in year of sowing for late summer sown trials</b>					
	absent or very weak					1
	weak					3
	medium					5
	strong					7
	very strong					9
<b>22 (*)</b>	<b>Tendency to form inflorescences in year after sowing (autumn sown trials)</b>					
	absent or very weak					1
	weak					3
	medium					5
	strong					7
	very strong					9

	Stage <sup>1)</sup> Stade <sup>1)</sup> Stadium <sup>1)</sup> Estado <sup>1)</sup>	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>23.</b>	<b>61-62</b>	<b>Time of flowering in year of sowing for spring sown trials (50% of plants with at least one open flower)</b>					
(*)		very early					1
		early					3
		medium					5
		late					7
		very late					9
<b>24.</b>	<b>61-62</b>	<b>Time of flowering in year after year of sowing for autumn sown trials (50% of plants with at least one open flower)</b>					
(*)		very early					1
		early					3
		medium					5
		late					7
		very late					9
<b>25.</b>	<b>62</b>	<b>Flower: color of petal</b>					
(*)		lemon yellow					1
		orange yellow					2
		orange					3

	Stage <sup>1)</sup> Stade <sup>1)</sup> Stadium <sup>1)</sup> Estado <sup>1)</sup>	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>26.</b>	<b>62</b>	<b>Flower: length of petal</b>					
		short					3
		medium					5
		long					7
<b>27.</b>	<b>62</b>	<b>Flower: width of petal</b>					
		narrow					3
		medium					5
		broad					7
<b>28.</b> (*)	<b>61-63</b>	<b>Flower: production of pollen</b>					
		absent					1
		present					9
<b>29</b>	<b>79-80</b>	<b>Plant: stem stiffness</b>					
		weak					3
		medium					5
		strong					7
<b>30.</b> (*)	<b>79-80</b>	<b>Plant: length of main stem</b>					
		short to medium					4
		medium					5
		medium to long					6

	Stage <sup>1)</sup> Stade <sup>1)</sup> Stadium <sup>1)</sup> Estado <sup>1)</sup>	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>31.</b>	<b>79</b>	<b>Plant: diameter of stem (about 10 cm above rootneck)</b>					
		small to medium					4
		medium					5
		medium to large					6
<b>32.</b>	<b>71-75</b>	<b>Siliqua: anthocyanin coloration</b>					
		weak					3
		medium					5
		strong					7
<b>33.</b>	<b>71-75</b>	<b>Siliqua: attitude (the angle joining the pedicel to pod)</b>					
		erect					1
		semi-erect					3
		horizontal					5
		slightly drooping					7
		drooping					9
<b>34.</b>	<b>80</b>	<b>Siliqua: length (between peduncle and beak)</b>					
<b>(*)</b>		short					3
		medium					5
		long					7
<b>35.</b>	<b>80</b>	<b>Siliqua: width (widest point)</b>					
		thin					3
		medium					5
		wide					7

	Stage <sup>1)</sup> Stade <sup>1)</sup> Stadium <sup>1)</sup> Estado <sup>1)</sup>	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>36.</b>	<b>80</b>	<b>Siliqua: length of beak</b>					
<b>(*)</b>		short					3
		medium					5
		long					7
<b>37.</b>	<b>80</b>	<b>Siliqua: length of peduncle</b>					
		short					3
		medium					5
		long					7
<b>38.</b>	<b>00</b>	<b>Seed: percentage of yellow seeds per 500 seeds</b>					
		00 - 10%					1
		11 - 20%					2
		21 - 30%					3
		31 - 40%					4
		41 - 50%					5
		51 - 60%					6
		61 - 70%					7
		71 - 80%					8
		81 - 90%					9
		91 - 100%					10

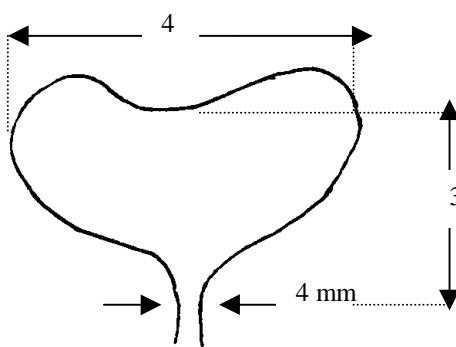
VIII. Explanations on the Table of Characteristics

Ad. 1: Seed: erucic acid

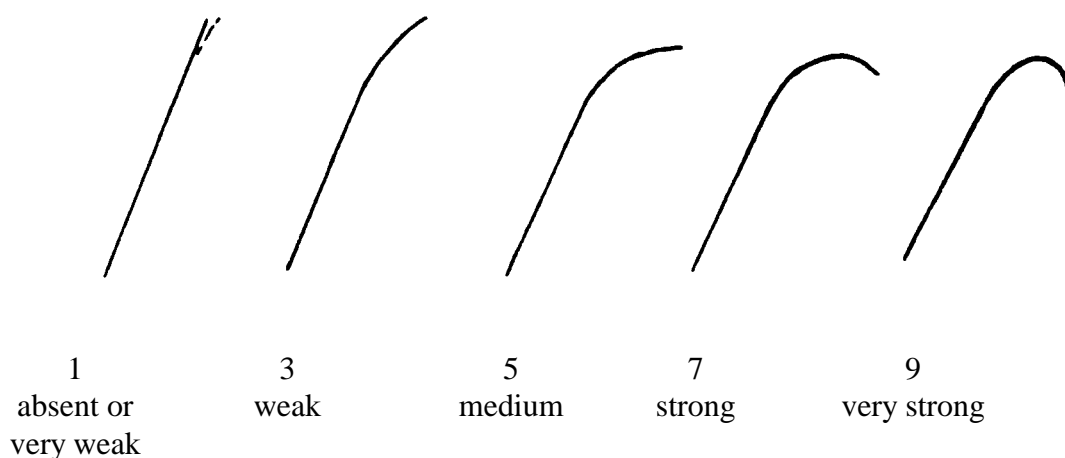
The erucic acid content should be observed on seed sent in by the applicant. It should be expressed as a percentage by mass of methyl esters in accordance with the ISO standard in document 5508, paragraph 6.2.2.1. Seed containing 2% or less of erucic acid will be classified as “absent”.

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

The measurements should be taken in the glasshouse on cotyledons of 40 seedlings. If the two cotyledons differ in size, the biggest one should be measured. The length is defined as the distance between the inclination at the 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.



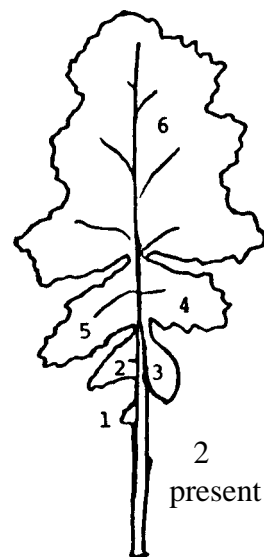
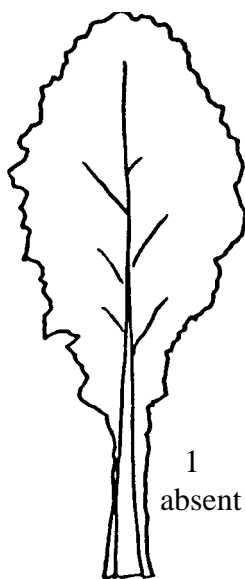
Ad. 7: Leaf: reflexion of top



Ad. 9: Leaf: frequency of plants with lobed leaves

- 1 plants with lobed leaves are absent or very few
- 3 1/4 of the plants with lobed leaves
- 5 1/2 of the plants with lobed leaves
- 7 3/4 of the plants with lobed leaves
- 9 all plants with lobed leaves

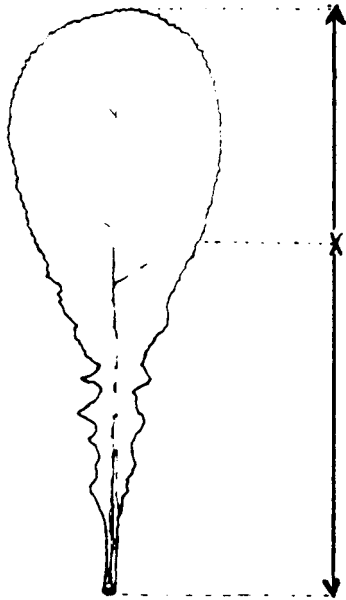
Ad. 10: Leaf: presence and number of lobes



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.



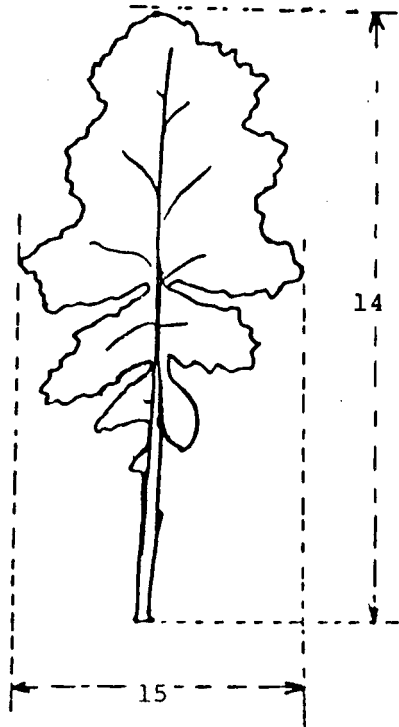
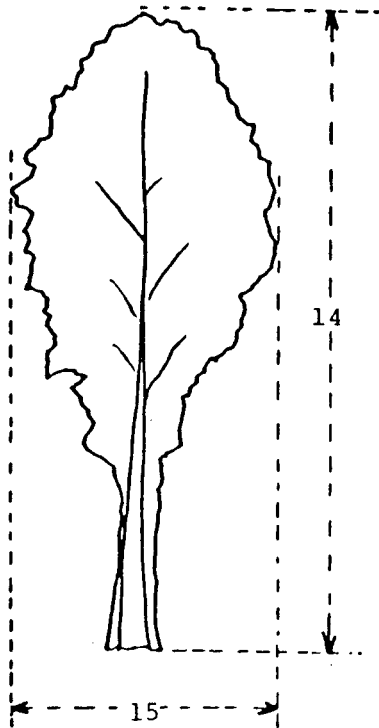
Ad. 11 + 13: Leaf: incisions (11) and dentation (13)



13 part on which the dentation should be recorded (characteristic 13)

11 part on which the incisions of base of the blade should be recorded (characteristic 11)

Ad. 14 + 15: Leaf: length (14) and width (15)



Key for the growth stages, spring sown varieties

Key	General Description
0	<u>Germination</u>
00	Dry Seed
10	<u>Seedling growth</u>
11	Appearance of cotyledons
13	Cotyledons expanded
15	1 leaf-stage
17	2 leaf-stage
19	3 leaf-stage
20	<u>Rosette and stem elongation</u>
21	4 leaf-stage
22	5 leaf-stage
23	6 leaf-stage
30	Stem elongation begins
50	<u>Bud formation</u>
51	Terminal bud is present, not raised above leaves
53	Terminal bud is raised above level of leaves
57	Pedicels are elongating
59	Buds are yellowing
60	<u>Flower</u>
61	First open bud on terminal raceme
62	Few buds are open on terminal raceme
64	Full flower, lower siliquas are elongating
65	Lower siliques are starting to fill
67	Seeds in lower siliquas are enlarging, all buds are open
70	<u>Silique</u>
71	Seeds in lower siliquas are in full size translucent
75	Seeds in lower siliquas are green, opaque
79	All seeds of siliquas on terminal raceme are dark green
80	<u>Maturation</u>
81	Seeds in lower siliquas on terminal raceme show brown areas
85	Seeds in upper siliquas show brown areas
89	Brown siliquas are brittle, stems are dry

IX Literature

X. Technical Questionnaire

	<p>Reference Number (not to be filled in by the applicant)</p>
<p style="text-align: center;"><b>TECHNICAL QUESTIONNAIRE</b> to be completed in connection with an application for plant breeders' rights</p>	
<p>1. Species</p>	<p><i>Brassica rapa</i> L.  TURNIP RAPE</p> <p>1.1 Variety</p> <p>Oleifera</p>
<p>2. Applicant (Name and address)</p>	
<p>3. Proposed denomination or breeder's reference</p>	

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

4.1 Genetic origin and breeding method

4.2 Type of material

- (a) parental line [ ]
- (b) single hybrid [ ]
- (c) three-way hybrid [ ]
- (d) double hybrid [ ]
- (e) top-cross hybrid [ ]
- (f) synthetic variety [ ]
- (g) open-pollinated variety [ ]
- (h) other (indicate formula)[ ]

4.3 Formula

4.4 Other information

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the state of expression which best corresponds).

Characteristics	Example Varieties	Note
<b>5.1 Ploidy (2)</b>		
diploid		1[ ]
tetraploid		9[ ]
<b>5.2 Flower: color of petal (25)</b>		
lemon yellow		1[ ]
orange lemon		2[ ]
orange		3[ ]
<b>5.3 Time of flowering in year of sowing for spring sown trials (23)</b>		
very early		1[ ]
early		3[ ]
medium		5[ ]
late		7[ ]
very late		9[ ]
<b>5.4 Time of flowering in year after year of sowing for autumn sown trials (24)</b>		
very early		1[ ]
early		3[ ]
medium		5[ ]
late		7[ ]
very late		9[ ]

6. Similar varieties and differences from these varieties

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

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

7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

7.3 Other information

8. Authorization for release

- (a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?

Yes      [ ]                      No      [ ]

- (b) Has such authorization been obtained?

Yes      [ ]                      No      [ ]

If the answer to that question is yes, please attach a copy of such an authorization.

[End of document]