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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

BROWN MUSTARD

UPOV Code: BRASS_JUN

Brassica juncea (L.) Czern.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Japan

to be considered by the

Technical Working Party for Vegetables
at its forty-seventh session, to be held in Nagasaki, Japan, from May 20 to 24, 2013

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Brassica juncea (L.) Czern.	Brown mustard, India mustard, Indian mustard, Oriental mustard	Moutarde brune	Sareptasenf	Mostaza de Sarepta, Mostaza india

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 juncea* (L.) Czern and its hybrids.

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:

20,000 seeds or 100g for drilled plots.

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

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

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

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.

(a) Stage of development for the assessment

“The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column of the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS

3.4 Test Design

Each test should be designed to result in a total of at least 40 for vegetable 300 for agricultural plants, which should be divided between at least 2 replicates.

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.

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 / Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 20 plants or parts taken from each of 20 plants for vegetable, 60 plants or parts taken from each of 60 plants for agricultural plants and any other observations made on all plants in the test, disregarding any off-type plants.

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 second column of 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 The assessment of uniformity should be according to the recommendations for cross pollinated varieties in the General Introduction.

4.2.3 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.

4.2.4 For the assessment of uniformity of inbred line varieties, a population standard of 1 % and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 40 plants, 2 off-types are allowed. In the case of a sample size of 300 plants, 6 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: color (characteristic 1)
(b) Leaf: type (characteristic 6)
(c) Leaf blade: anthocyanin coloration (characteristic 17)
(d) Leaf blade: density of incision of margin (characteristic 20)
(e) Leaf blade: blistering (characteristic 22)
(f) Head: formation (characteristic 27)

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 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	Note
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

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

(*) Asterisked characteristic – see Chapter 6.1.2

QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS – see Chapter 4.1.5

(+) See Explanations on the Table of Characteristics in Chapter 8.
Stage of development: see Section 3.3. (a)

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

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. **(*)** **(+)**	**00** **VG**	**Seed: color**					
PQ		yellow					1
		brown					2
		black					3
2. **(+)**	**10** **VG**	**Hypocotyl: anthocyanin coloration**					
QN		absent or weak				Zasai FM-58	1
		medium				Shinkoku seisai	2
		strong				Kigarashina	3
3.	**10** **MS/** **VG**	**Cotyledon: length**					
QN		short				Junkei yamashiona	3
		medium				Katsuona	5
		long					7
4.	**10** **MS/** **VG**	**Cotyledon: width**					
QN		narrow				Junkei yamashiona	3
		medium				Katsuona	5
		broad					7
5. **(*)** **(+)**	**10** **VG**	**Cotyledon: anthocyanin coloration**					
QL		absent				Zasai FM-58	1
		present				Akariasu	9
6. **(*)** **(+)**	**19,** **49** **VG**	**Leaf: type**					
PQ		type 1				Kigarashina	1
		type 2				Riasu karashina	2
		type 3				Katsuona	3
		type 4				Miike takana	4

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
7. (*) (+)	**19, 49 VG**	**Leaf: shape**					
PQ		lanceolate					1
		oblanceolate					2
		ovate					3
		obovate					4
		elliptic					5
		broad elliptic				Zasai FM-58	6
		circular				Shinkoku seisai	7
		compressed circular					8
		spatulate					9
8. (*)	**19, 49 VG**	**Leaf: attitude**					
QN		erect				Junkei yamashiona	1
		semi-erect				Akaoba takana	2
		horizontal				Miike takana	3
9. (+)	**19, 49 MS/ VG**	**Leaf: length (blade and petiole)**					
QN		short				Chirimen hakarashina	3
		medium				Miike takana	5
		long					7
10. (+)	**19, 49 MS/ VG**	**Leaf: width (widest point)**					
QN		narrow					3
		medium					5
		broad					7
11. (+)	**19, 49 MS/ VG**	**Leaf: length of petiole**					
QN		absent or very short				Serihon	1
		medium				Miike takana	3
		medium				Junkei yamashiona	5
		long				Kigarashina	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12.	**19,-49 MS/ VG**	**Leaf: thickness of petiole at widest point**					
QN		thin				Akaoba takana	3
		medium				Shinkoku seisai	5
		thick				Kekkyu takana	7
13.	**19, 49 VG**	**Leaf: intensity of green color**					
QN		light				Kekkyu takana	3
		medium				Katsuona	5
		dark				Kigarashina	7
14. (+)	**19, 49 MS/ VG**	**Leaf blade: size of terminal lobe (only variety with leaf type 1 or type2)**					
QN		small				Chirimen hakarashina	3
		medium				Kigarashina	5
		large					7
15. (+)	**19, 49 MS/ VG**	**Leaf blade: intensity of lateral lobe (only variety with leaf type 1 or type2)**					
QN		sparse				Akariasu	3
		medium				Kigarashina	5
		dense					7
16.	**19, 49 VG**	**Leaf blade: pubescence**					
QN		absent or very few				Miike takana	1
		few					3
		medium				Katsuona	5
		many				Kigarashina	7
17. (*)	**19, 49 VG**	**Leaf blade: anthocyanin coloration**					
QL		absent				Kekkyu takana	1
		present				Akaoba takana	9
18. (*)	**19, 49 VG**	**Variety with anthocyanin coloration present only: Leaf blade: intensity of anthocyanin coloration**					
QN		weak				Kigarashina	3
		medium				Miike takana	5
		strong				Akaoba takana	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
19. (*)	**19, 49 VG**	**Leaf blade: undulation of margin**					
QN		absent or very weak					1
		weak				Akaoba takana	3
		medium				Katsuona	5
		strong				Chirimen hakarashina	7
20. (*) (+)	**19, 49 VG**	**Leaf blade: density of incision of margin**					
QN		absent or very sparse				Katsuona	1
		sparse					3
		medium				Junkei yamashiona	5
		dense				Chirimen hakarashina	7
21. (*)	**19, 49 VG**	**Leaf blade: depth of incision of margin**					
QN		absent or very shallow				Kigarashina	1
		shallow					3
		medium					5
		deep				Riasu karashina	7
22. (*) (+)	**19, 49 VG**	**Leaf blade: blistering**					
QN		weak				Kigarashina	3
		medium					5
		strong				Katsuona	7
23.	**19, 49 MS/ VG**	**Leaf blade: width of midrib at widest point**					
QN		narrow				Kigarashina	3
		medium				Katsuona	5
		broad				Shinkoku seisai	7
24.	**19, 49 VG**	**Leaf blade: anthocyanin coloration of midrib**					
QL		absent					1
		present					9
25. (+)	**20-29 VG**	**Stem: type of main stem (excluding heading type)**					
PQ		not enlarged					1
		laterally enlarged					2
		longitudinally enlarged					3
		budding enlarged					4

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26.	**30-39 VG**	**Time of beginning of bolting**					
QN		early				Junkei yamashiona	3
		medium				Katsuona	5
		late				Akaoba takana	7
27. (*)	**41-49 VG**	**Head: formation**					
QL		absent				Kigarashina	1
		present				Kekkyu takana	9
28.	**49 MS/ VG**	**Head: height (head type only)**					
QN		short					3
		medium				Unzen kekkyu takana	5
		tall					7
29.	**49 MS/ VG**	**Head: diameter (head type only)**					
QN		narrow					3
		medium				Kekkyu takana	5
		broad					7
30.	**49 MS/ VG**	**Head: number of leaf (head type only)**					
QN		few					3
		medium				Kekkyu takana	5
		many					7
31. (*)	**49 VG**	**Head: color of inside (head type only)**					
PQ		yellowish white				Unzen kekkyu takana	1
		light green					2
		green				Kekkyu takana	3
32.	**49 MS/ VG**	**Head: length of core (head type only)**					
QN		short					
		medium					
		long					
33. (*) (+)	**19, 49 VG**	**Plant: tillering**					
QL		absent				Akaoba takana	1
		present				Riasu karashina,	9

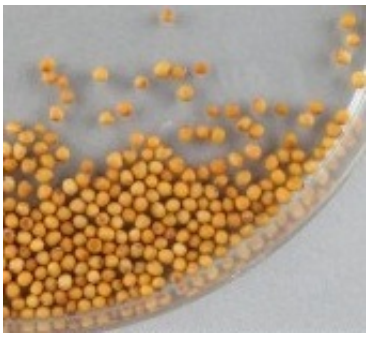
		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
34. (*)	**60 VG**	**Time of flowering**					
QN		early					3
		medium					5
		late					7
35.	**65 MS/ VG**	**Flower: length of petal**					
QN		short					3
		medium					5
		long					7
36.	**65 MS/ VG**	**Flower: width of petal**					
QN		narrow					3
		medium					5
		broad					7
37.	**69- 89 MS/ VG**	**Plant: total length (after flowering, side branches included) (not for vegetable mustard)**					
QN		short					3
		medium					5
		tall					7
38.	**79- 89 MS/ VG**	**Siliqua: length(between peduncle and beak) (not for vegetable mustard)**					
QN		short					3
		medium					5
		long					7
39.	**79- 89 MS/ VG**	**Siliqua: width (not for vegetable mustard)**					
QN		narrow					3
		medium					5
		broad					7
40.	**79- 89 MS/ VG**	**Siliqua: length of beak (not for vegetable mustard)**					
QN		short					3
		medium					5
		long					7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
41.	**79-89 MS/ VG**	**Siliqua: length of peduncle (not for vegetable mustard)**					
QN		short					3
		medium					5
		long					7

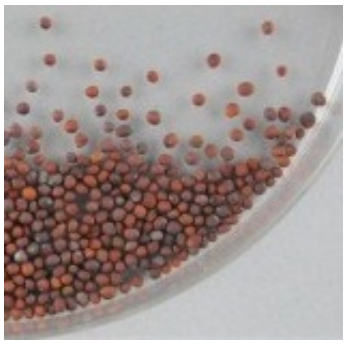
8. Explanations on the Table of Characteristics

8.1 Explanations for individual characteristics

Ad. 1: Seed: color



1
yellow



2
brown

3
black

Ad. 2: Hypocotyl: anthocyanin coloration

1
absent or weak

2
medium

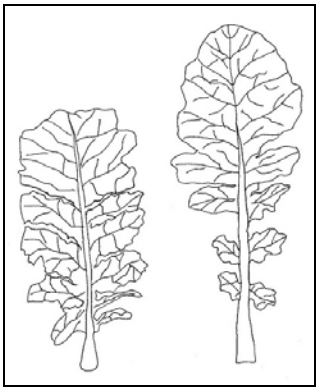
3
strong

Ad. 5: Cotyledon: anthocyanin coloration

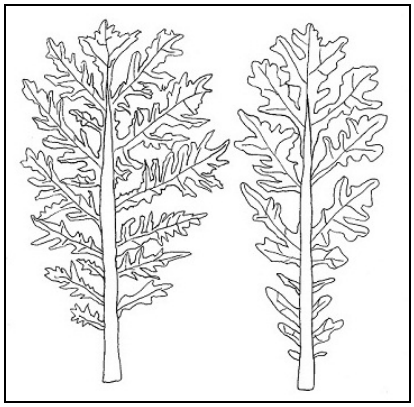
1
absent

9
present

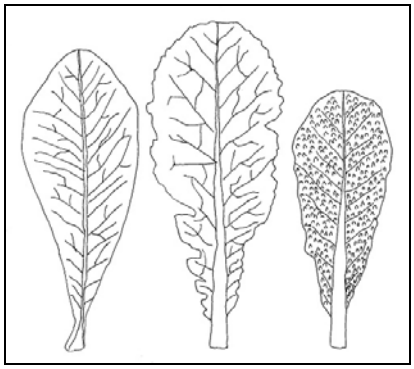
Ad. 6: Leaf: type



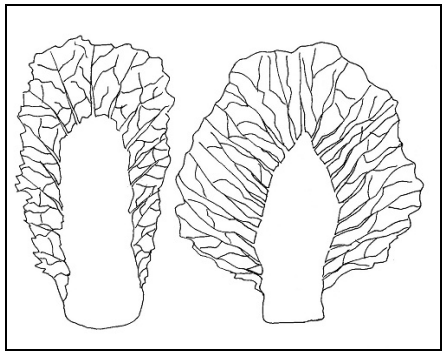
1
type 1
(lyrate)



2
type 2
(division)



3
type 3
(entire and narrow midrib)

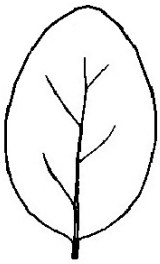


4
type 4
(entire and broad midrib)

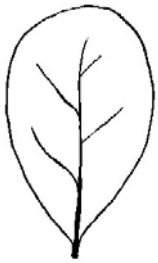
Ad. 7: Leaf: shape

1
lanceolate

3
oblanceolate

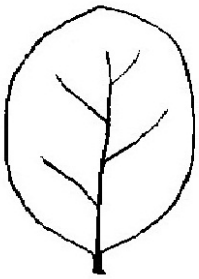


2
ovate

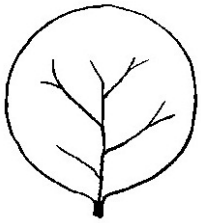


4
obovate

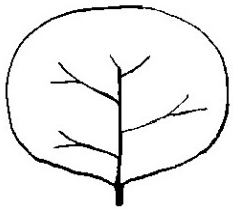
5
elliptic



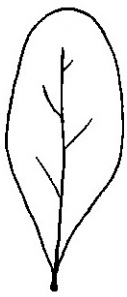
6
broad elliptic



7
circular

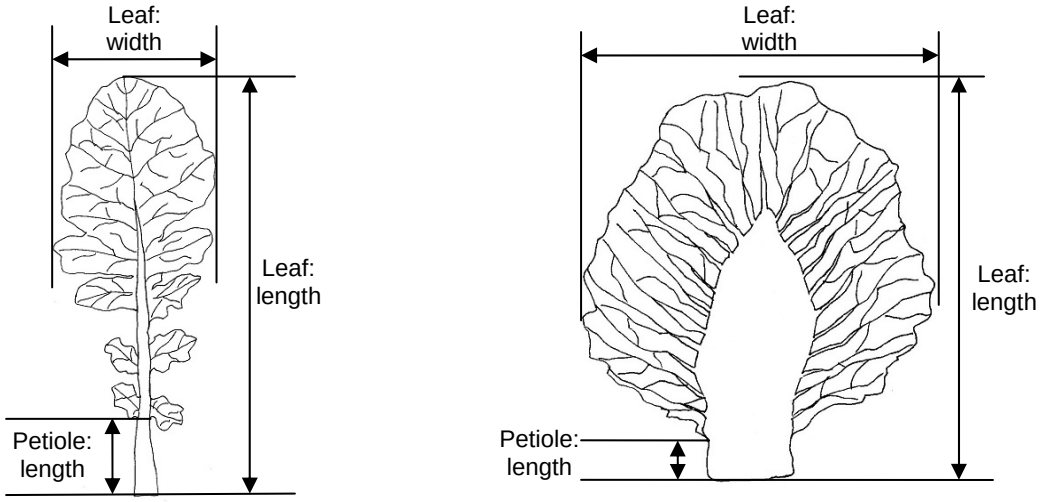


8
compressed circular

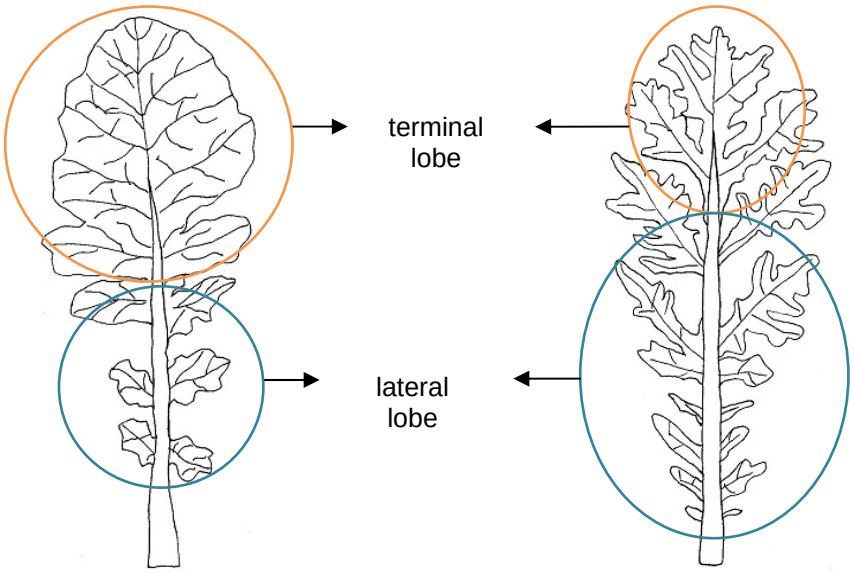


9
spatulate

Ad. 9: Leaf: length (blade and petiole)
Ad. 10: Leaf: width (widest point)
Ad. 11: Leaf: length of petiole



Ad. 14: Leaf blade: size of terminal lobe (only variety with leaf type 1 or type 2)
Ad. 15: Leaf blade: intensity of lateral lobe (only variety with leaf type 1 or type 2)



3
sparse

5
medium

7
dense

Ad. 20: Leaf blade: density of incision of margin

JP: To be provided appropriate diagram

Ad. 22: Leaf blade: blistering

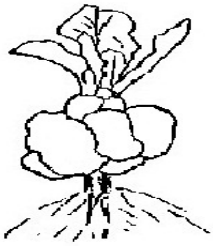
3
weak

5
medium

7
strong

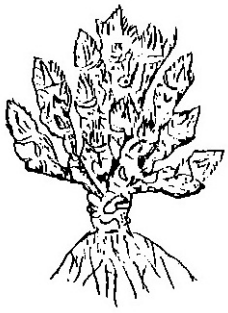
Ad. 25: Stem: type of main stem (excluding heading type)

1
not enlarged



2
laterally enlarged

3
longitudinally enlarged



4
budding enlarged

Ad. 33: Plant: tillering

1
absent

9
present

8.2 Key for the Stages of Development

KEY	GENERAL DESCRIPTION
0	Principal growth stage 0: Germination
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
1	Principal growth stage 1: Leaf development
10	Cotyledons completely unfolded
11	First leaf unfolded
12	2 leaves unfolded
13	3 leaves unfolded
14	4 leaves unfolded
15	5 leaves unfolded
16	6 leaves unfolded
17	7 leaves unfolded
18	8 leaves unfolded
19	9 or more leaves unfolded
2	Principal growth stage 2: Formation of side shoots
20	No side shoots
21	first side shoot detectable
22	2 side shoots detectable
23	3 side shoots detectable
24	4 side shoots detectable
25	5 side shoots detectable
26	6 side shoots detectable
27	7 side shoots detectable
28	8 side shoots detectable
29	9 or more side shoots detectable
3	Principal growth stage 3: Stem elongation
30	no internodes (“rosette”)
31	1 visibly extended internode
32	2 visibly extended internode
33	3 visibly extended internode
34	4 visibly extended internode
35	5 visibly extended internode
36	6 visibly extended internode
37	7 visibly extended internode
38	8 visibly extended internode
39	9 or more visibly extended internodes

4	Principal growth stage 4: Development of head
41	the two youngest leaves do not unfold
42	20% of the expected head size reached
43	30% of the expected head size reached
44	40% of the expected head size reached
45	50% of the expected head size reached
46	60% of the expected head size reached
47	70% of the expected head size reached
48	80% of the expected head size reached
49	Typical size, form and firmness of heads reached
5	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”)
6	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
7	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
8	Principal growth stage 8: Ripening
80	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
9	Principal growth stage 9: Senescence
97	Plant dead and dry
99	Harvested product

9. Literature

Fujishiro, T., 1996: Breeding processes and characteristics of a newly bred leaf mustard (*Brassica Juncea* Coss.)., Kanagawa, Japan

Joy Larkcom., 1991: Oriental Vegetables (The Complete guide for Garden and Kitchen) London, United Kingdom. pp. 39 to 45

Ministry of Agriculture, Forestry & Fisheries of Japan., 1994: National Test Guideline for Karashina

Roger Phillips, Martyn Rix., 1993: VEGETABLES (The Pan Garden Plants Series) p.44

Takasi A., 2004: Yasai-engei-daihyakka 17. Shadanhojin Nousan-gyoson-bunkakyokai. Tokyo, Japan. pp. 169 to 233

Tsukamoto, Y., 1994: The Grand Dictionary of Horticulture Volume 1. The Shogakukan Ltd., Tokyo, Japan, pp. 520 to 522

Meier, U. Federal Biological Research Centre for Agriculture and Forestry, 2001: Growth stages of mono-and dicotyledonous plants, BBCH Monograph

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

1. Subject of the Technical Questionnaire

1.1 Botanical name	*Brassica juncea* (L.) Czern
1.2 Common name	Brown Mustard

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 varieties)

(……..……..) 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:

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

(a) Self-pollination [ ]
(b) Cross-pollination
(i) population [ ]
(ii) synthetic variety [ ]
(c) Hybrid [ ]
(d) Other [ ]
(please provide details)

4.2.2 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 line male line

(……..) 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 (5)	**Cotyledon: anthocyanin coloration**		
	absent	Zasai FM 58	1 [ ]
	present	Akariasu	9 [ ]
5.2 (6)	**Leaf: type**		
	type1	Kigarashina	1 [ ]
	type2	Riasu karashina	2 [ ]
	type3	Katsuona	3 [ ]
	type4	Miike takana	4 [ ]
5.3 (18)	**Variety with anthocyanin coloration present only: Leaf blade: intensity of anthocyanin coloration**		
	absent or very weak	Kekkyu takana	1 [ ]
	very weak to weak		2 [ ]
	weak	Kigarashina	3 [ ]
	weak to medium		4 [ ]
	medium	Miike takana	5 [ ]
	medium to strong		6 [ ]
	strong	Akaoba takana	7 [ ]
	strong to very strong		8 [ ]
	very strong		9 [ ]
5.4 (20)	**Leaf blade: density of incision of margin**		
	absent or very sparse	Katsuona	1 [ ]
	very sparse to sparse		2 [ ]
	sparse		3 [ ]
	sparse to medium		4 [ ]
	medium	Junkei yamashiona	5 [ ]
	medium to dense		6 [ ]
	dense	Chirimen hakarashina	7 [ ]
	dense to very dense		8 [ ]
	very dense		9 [ ]

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

	Characteristics	Example Varieties	Note
5.5 (22)	**Leaf blade: blistering**		
	very weak		1 [ ]
	very weak to weak		2 [ ]
	weak	Kigarashina	3 [ ]
	weak to medium		4 [ ]
	medium		5 [ ]
	medium to strong		6 [ ]
	strong	Katsuona	7 [ ]
	strong to very strong		8 [ ]
	very strong		9 [ ]
5.6 (23)	**Leaf blade: shape of apex**		
	acute	Nagasaki takana	1 [ ]
	obtuse	Katsuona	2 [ ]
	rounded	Miike takana	3 [ ]
5.7 (27)	**Head: formation**		
	absent	Kigarashina	1 [ ]
	present	Kekkyu takana	2 [ ]
5.8 (31)	**Head: color of inside (heading type only)**		
	yellowish white	Unzen kekkyu takana	1 [ ]
	light green		2 [ ]
	green	Kekkyu takana	3 [ ]

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	*Leaf blade: shape of apex*	*acute*	*obtuse*

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 Main use

(a)	vegetable	[ ]
(b)	seed	[ ]
(c)	other (please provide details)	[ ]

A representative color image of the variety should accompany 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.

[#] 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:

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

[Annex follows]

ANNEX

SUBGROUP COMMENTS ON DOCUMENT TG/BRASS_JUN(proj.1)

E

UPOV

TG/BRASS_JUN(proj.1)
ORIGINAL: English
DATE: 2013-02-08

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

Brown Mustard

UPOV Code: BRASS_JUN

Brassica juncea (L.) Czern.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Japan

to be considered by the

Technical Working Party for Vegetables
at its forty-seventh session, to be held in Japan from 20 to 24 May 2013

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Brassica juncea (L.) Czern.	Brown mustard ; India mustard; Indian mustard; Oriental mustard	Moutarde brune	Sareptasenf	Mostaza de Sarepta; Mostaza india

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.]

TABLE OF CONTENTS PAGE

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Brassica juncea* (L.) Czern.

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:

3000 seeds
DE needs appr. 20.000 seeds or 100 g for drill*ed* plots
JP: We accept to cover for quantity of agricultural plants.

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

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

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

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.

(a) Stage of development for the assessment

“The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column of the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS

3.4 Test Design

Each test should be designed to result in a total of at least 40 for vegetable 300 for agricultural plants, which should be divided between at least 2 replicates.
NI:40 plants seems to be low for the non vegetable varieties and proposes to have at least 80 plants for the agricultural varieties.

JP: We accept to add for quantity of agricultural 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.

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 / Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 20 plants or parts taken from each of 20 plants and any other observations made on all plants in the test, disregarding any off-type plants.
DE: propose to have 60 plants as for UPOV TG 179/3.
JP: We accept to add for quantity of agricultural plants.

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 second column of 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 The assessment of uniformity should be according to the recommendations for cross pollinated varieties in the General Introduction.

4.2.3 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.

4.2.4 For the assessment of uniformity of self-pollinated varieties, a population standard of 1 % and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 40 plants, 2 off-types are allowed.
DE: Should be deleted. Brassica juncea is not self-pollinating
JP: We made a mistake in the sentence. It should be replaced inbred line.

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:

Nl: We want to add Seed: color
JP: We accept to add seed color for grouping characteristic and table of characteristic.

(a) Cotyledon: anthocyanin coloration (characteristic 7)

Nl: We have proposed to deleted this characteristic in the table, but we do want to add one of the leaf blade characteristics with anthocynin coloration absent or present in the grouping characteristics

JP: Although we can accept to delete this grouping characteristic, characteristic 20 is to be discussed and resolved in Nagasaki.

(b) Leaf: type (characteristic 8)
(c) Leaf blade: anthocyanin coloration (characteristic 20)
(d) Leaf blade: density of incision of margin (characteristic 22)
(e) Leaf blade: blistering (characteristic 24)
(f) Leaf blade: shape of apex (characteristic 25)

NL: Characteristic c, d, e and f are QN charactersistics. We would like to delete them as grouping characteristics
JP: to be discussed in Nagasaki.

(g) Head: formation (characteristic 30)
(h) Head: color of inside (heading type only) (characteristic 34)

DE : to be adapted according to the changes in the Table of Char.
JP: we think discussion of grouping characteristic, it might be speculated to set characteristics such as NL proposal to split characteristic 20.

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 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	Note
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

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

(*) Asterisked characteristic – see Chapter 6.1.2

QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS – see Chapter 4.1.5

(+) See Explanations on the Table of Characteristics in Chapter 8.
Stage of development: see Section 3.3. (a)

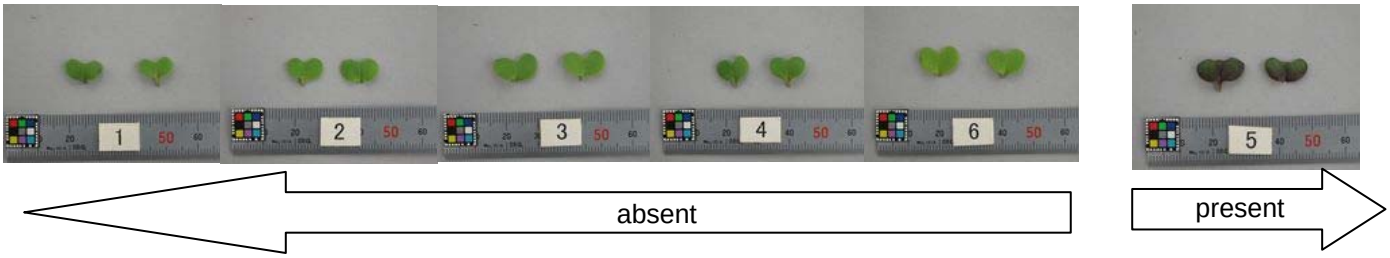
7. Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	**00 MG**	**Seed: erucic acid content (not for vegetable mustard)**					
QL		absent				ask to TWA for example variety	1
		present					9
DE: Not needed for German Brassica juncea, which are all for agricultural purpose **JP: We don't have experience of examination for this characteristic. What is more this characteristic is no need for the vegetable type. We delete this characteristic.**							
2.	**00 MG**	**Seed: glucosinolate content (not for vegetable mustard)**					
QN		low				ask to TWA for example variety	3
		medium					5
DE: Not needed for German Brassica juncea, which are all for agricultural purpose **JP: We don't have experience of examination for this characteristic. What is more this characteristic is no need for the vegetable type. We delete this characteristic.**							
		high					7
3.	**00 MG**	**Seed: oil content (not for vegetable mustard)**					
DE: Not needed for German Brassica juncea, which are all for agricultural purpose **JP: We don't have experience of examination for this characteristic. What is more this characteristic is no need for the vegetable type. We delete this characteristic.**							
QN		low				ask to TWA for example variety	3
		medium					5
		high					7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4. **(+)**	**10** **VG**	**Hypocotyl: anthocyanin coloration**	DE: no variation up to now for anthocyanin characteristics. Correlation between Char. 4, 7 (14 note 4) and 20 should be checked to choose most informative char. NI Proposes to make this a QL characteristic with the expressions 1 absent and 9 present **JP: we recognize anthocyanin coloration is continuous expression.** **There is no possibility to accept QL for this characteristic.**				

QN	absent or weak	Zasai FM-58	1
	medium	Shinkoku seisai	2
	strong	Kigarashina	3
5.	**10 MS/ VG**	**Cotyledon: length**		
QN	short	Junkei yamashiona	3
	medium	Katsuona	5
	long		7
6.	**10 MS/ VG**	**Cotyledon: width**		
QN	narrow	Junkei yamashiona	3
	medium	Katsuona	5
	broad		7

7. **(*)** **(+)**	**10** **VG**	**Cotyledon: anthocyanin coloration**	DE: no variation up to now for anthocyanin characteristics. Correlation between Char. 4, 7(14 note 4) and 20, 27 should be checked to choose most informative char. NI: Does this characteristic add valuable information, next to the other anthocyanin characteristics, for us delete NI: Is a QN characterisitic instead of a QL **JP: However we don't have valuable information, it is very clear for identification of varieties.** **We would like to keep this characteristic as QL absent / present.**				



~~**QL**~~	absent or weak	Zasai FM-58	1
	medium		2
	strong	Akariasu	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8. **(*)** **(+)**	**19, 49 VG**	**Leaf: type**	DE: Propose to have two new characteristics instead of Leaf: type: 8a) Leaf: Number of lobes (absent or very few(1) to very many (9)) 8b) Leaf: Secondary lobing (absent or very few(1) to very many (9)) Nl: in the explanation there seems not to be a lot of difference between the last example of expression 2: type 2 and expression 3 type 3? **JP to DE: Leaf type is very specific feature for identification of the type of vegetable mustard in East Asia country. If you don't prefer for agriculture type, we would like to confine this characteristic to vegetable type.** **JP to NL: we delete last example of type 2**				
PQ		type1				Kigarashina	1
		type2				Riasu karashina	2
		type3				Katsuona	3
		type4				Miike takana	4
9. **(*)**	**19, 49 VG**	**Leaf: attitude**	DE: we have problems to understand. Leaves to be observed should be defined (middle part…?). Probably no variation in German agricultural varieties. Nl proposes to uses the notes **1** (erect) **3** semi-erect and **5** horizontal because we find that there is enough variation between the varieties. **JP to DE: Please make sure this expression from following photographs of Japanese DUS trial.** **JP to NL: We accept your suggestion 1-5 states.**				




QN		erect				Junkei yamashiona	1
		semi-erect				.Akaoba takana	2
		horizontal,				Miike takana	3
10. **(+)**	**19, 49 MS/ VG**	**Leaf: length(include petiole)**	DE: Propose to adapt to UPOV TG 179/3: Char. 8: Leaf: length (blade and petiole) and to use the same definitions in the drawing **JP to DE: We accept to make consistent with UPOV TG 179/3**				
QN		short				Chirimen hakarashina	3
		medium				Miike takana	5
		long					7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11. **(+)**	**19, 49 MS/ VG**	**Leaf: width**	DE: Propose to adapt to UPOV TG 179/3: Char. 9: Leaf: width (widest point) NI proposes to change into: Leaf: width (at broadest part) **JP: We accept to make consistent with UPOV TG 179/3**				
QN		narrow					3
		medium					5
		broad					7
12. **(+)**	**19, 49 MS/ VG**	**Leaf: length of petiole**					
QN		absent or very short				Serihon	1
		medium				Miike takana	3
		medium				Junkei yamashiona	5
		long				Kigarashina	7
13.	**19,-49 MS/ VG**	**Leaf: thickness of petiole**	DE: Correlation between Char. 13 and 26? Definition should be added: "at widest point" or "at base"…. **JP: We accept to add a definition.**				
QN		thin				Akaoba takana	3
		medium				Shinkoku seisai	5
		thick				Kekkyu takana	7
14.	**19, 49 VG**	**Leaf: hue of green color**	DE: propose to delete or modify However, yellowish hue is probably the same than Char. 15 'light', greyish hue refers to glaucosity, reddish to Char 20. **JP: We accept to delete this characteristic.**				
PQ		absent				Kigarashina	1
		yellowish					2
		greyish					3
		reddish				Riasu karashina	4
15.	**19, 49 VG**	**Leaf: intensity of green coloration**	DE: propose to ad "Only varieties with : Leaf :hue of green color: absent:" **NI: proposes to change into Leaf intensity of color** **JP: We would like to keep this characteristic according to the information from DE on characteristic 14.** **yellowish is included light green.** **reddish is included characteristic 20** **greyish is guessed no existing expression.**				
QN		light				Kekkyu takana	3
		medium				Katsuona	5
		dark				Kigarashina	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16.	**19, 49 MS/ VG**	**Leaf: number of leaves on fully developed plant**	DE: for non-heading types, it is not easy to assess and may be correlated with length of plant. For heading types, diameter of head may be easier to asses? **JP: We delete this characteristic.**				
QN		few				Shinkoku seisai	3
		medium				Akaoba takana	5
		many				Kigarashina	7
17. (+)	**19, 49 MS/ VG**	**Leaf blade: size of terminal leaflet (only variety with leaf type 1 or type2)**	**NI Proposes to change into:** **Leaf blade: size of terminal lob (only variety with leaf type 1 or leaf type 2)** **JP: We accept to change into lobe.**				
QN		small				Chirimen hakarashina	3
		medium				Kigarashina	5
		large					7
18. (+)	**19, 49 MS/ VG**	**Leaf blade: number of lateral leaflets (only variety with leaf type 1 or type2)**	DE: propose to have "Only varieties with : Leaf: lobing : present: Leaf: Number of lobes" **NI Proposes to change into:** **Leaf: number of lobes (on fully developed leaves)** **with expressions** **1 absent or very few** **3 few** **5 medium** **7 many** **9 very many** **JP: We accept NL proposal because according to TGP 14 page 48, it is difficult to define the expression of lobbing present. Although we accept NL proposal, there is possibility for degree of lobe as this characteristic.**				
QN		few					3
		medium				Kigarashina	5
		many				Chirimen hakarashina	7
19.	**19, 49 VG**	**Leaf blade: pubescence**	DE: will be checked in the field 2013, probably no variation up to now **JP: We already checked actual DUS trial in February 2013 in Japan. It was able to confirm lower surface rather than upper surface. Please carefully observe.**				
QN		absent or very few				Miike takana	1
		few					3
		medium				Katsuona	5
		many				Kigarashina	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20. (*)	**19, 49 VG**	**Leaf blade: anthocyanin coloration**	DE: no variation up to now for anthocyanin characteristics. Correlation between Char. 4, 7(14 note 4) and 20, 27 should be checked to choose most informative char. **NI: proposes to change split into two characteristics. The first:** (QL) Leafblade: anthocyanin coloration 1 absent/9 present the second (QN) Varietis with anthocyanin coloration present only: Leafblade:intensity of anthocyanin coloration 3 weak/ 5 medium/ 7 strong **JP: Although we can accept NL suggestion to set grouping characteristic as QL, NL suggestion to be discussed in Nagasaki.**				
QN		absent or very weak				Kekkyu takana	1
		weak				Kigarashina	3
		medium				Miike takana	5
		strong				Akaoba takana	7
21. (*)	**19, 49 VG**	**Leaf blade: undulation of margin**	DE: will be checked in the field 2013, probably no variation up to now **NI proposes to add expression** **1 absent or very weak** **JP: The expression of example variety 'Chirimen hakarashina' we accept NL proposal absent or very weak expression.**  **'Chirimen hakarashina' strong**				
QN		weak				Akaoba takana	3
		medium				Katsuona	5
		strong				Chirimen hakarashina	7
22. (*) (+)	**19, 49 VG**	**Leaf blade: density of incision of margin**	DE: will be checked in the field 2013, probably no variation up to now. Drawing could be improved to make clear whether Number of incision should be observed or symmetry of incisions **JP: We would like to modify the diagram to make clear.**				
QN		absent or very sparse				Katsuona	1
		sparse					3
		medium				Junkei yamashiona	5
		dense				Chirimen hakarashina	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
23. (*)	**19, 49 VG**	**Leaf blade: depth of incision of margin**	DE: will be checked in the field 2013, probably no variation up to now NI: should be absent or **very** shallow **JP: We modify to NL indication.**				
QN		absent or shallow				Kigarashina	1
		shallow					3
		medium					5
		deep				Riasu karashina	7
24. (*) (+)	**19, 49 VG**	**Leaf blade: blistering**	DE: will be checked in the field 2013, probably only weak types up to now.				
QN		weak				Kigarashina	3
		medium					5
		strong				Katsuona	7
25. (+)	**19, 49 VG**	**Leaf blade: shape of apex**	DE: Is it used to declare varieties distinct, if it is the only character? Are the leaves within the plant uniform? How to assess a char. 8/Typ 2 variety? **JP: We checked actual DUS trial in February 2013 in Japan. We considered it is not useful and decided to delete this characteristic.**				
PQ		acute				Nagasaki takana	1
		obtuse				Katsuona	2
		rounded				Miike takana	3
26.	**19, 49 MS/ VG**	**Leaf blade: width of midrib**	DE: Correlation between Char. 13 and 26? Definition should be added: "at widest point" or "at base"… **JP: We accept to add a definition.**				
QN		narrow				Kigarashina	3
		medium				Katsuona	5
		broad				Shinkoku seisai	7
27.	**19, 49 VG**	**Leaf blade: anthocyanin coloration of midrib**	DE: no variation up to now for anthocyanin characteristics. Correlation between Char. 4, 7(14 note 4) and 20, 27 should be checked to choose most informative char **NI: is there enough variation between all varieties to use all different expressions We use the characteristic as well, but as a QL characteristic with the expressions 1 absent/ 9 present** **JP: We checked our past DUS result and experiences. But we couldn't confirm enough variation for this characteristic. We can accept NL proposal as QL.** **Ask to NL: Can you provide example variety for anthocyanin present?**				
QN		absent or very weak					1
		weak					3
		medium					5
		strong					7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
28. **(+)**	**20-29 VG**	**Stem: type of main stem (excluding heading type)**	DE. Looking forward to learn about this characteristic. Unknown types in Germany. **Nl proposes to use** **1: not** enlarged 2 laterally enlarged 3 longitudinally enlarged 4 budding enlarged like in the explantion insterad of type1/2/3 and4 **JP to DE: This characteristic is very specific feature for identification of the type of vegetable mustard in East Asia country.** **http://www.agrohaitai.com/rootstem/tsatsai/tsatsai.htm** **JP: We accept the wording of each expression from NL.**				
PQ		type1					1
		type2					2
		type3					3
		type4					4
29.	**30-39 VG**	**Time of beginning of bolting**	DE: propose to add: Only varieties heading: formation: head/present? **JP: Why do you confine heading type for bolting?**				
QN		early				Junkei yamashiona	3
		medium				Katsuona	5
		late				Akaoba takana	7
30. **(*)**	**41-49 VG**	**Head: formation**	DE: unknown types in Germany Expression could also be absent /present? **JP: We accept your opinion absent / present.**				
QL		no head				Kigarashina	1
		head				Kekkyu takana	2
31.	**49 MS/ VG**	**Head: height (head type only)**					
QN		short					3
		medium				Unzen kekkyu takana	5
		tall					7
32.	**49 MS/ VG**	**Head: diameter (head type only)**					
QN		narrow					3
		medium				Kekkyu takana	5
		broad					7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
33.	**49 MS/ VG**	**Head: number of leaf (head type only)**					
QN		few					3
		medium				Kekkyu takana	5
		many					7
34. (*)	**49 VG**	**Head: color of inside (head type only)**					
PQ		yellowish white				Unzen kekkyu takana	1
		light green					2
		green				Kekkyu takana	3
35.	**49 MS/ VG**	**Head: length of core (head type only)**					
QN		short					3
		medium				Unzen kekkyu takana	5
		long				Kekkyu takana	7
36.	**51 MS/ VG**	**Plant: height at appearance of the flower bud**	DE: propose to discuss for which types of varieties it should be assessed. We probably have high correlation between 36 and 38 **JP: We would like to delete this characteristic because we don't have experience for this characteristic.**				
QN		short					3
		medium					5
		tall					7
37. (*)	**60 VG**	**Time of flowering**					
QN		early					3
		medium					5
		late					7
38.	**65 MS/ VG**	**Plant: height at flowering (at full flowering)**	DE: propose to discuss for which types of varieties it should be assessed. We probably have high correlation between 36 and 38 for agricultural types **JP: We would like to delete this characteristic because we don't have experience for this characteristic.**				
QN		short					3
		medium					5
		tall					7
39.	**65 MS/ VG**	**Flower: length of petal**					
QN		short					3
		medium					5
		long					7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
40.	**65 MS/ VG**	**Flower: width of petal**					
QN		narrow					3
		medium					5
		broad					7
41.	**67- 69 VG**	**Flower: male sterility**	DE: we have no sterile agricultural varieties **JP: We would like to delete this characteristic because we don't have experience for this characteristic**				
PQ		absent					1
		partially male sterile					2
		male sterile					3
42.	**69 - 89 MS/ VG**	**Plant: total length (after flowering, side branches included) (not for vegetable mustard)**	DE We measure at the time of ripening.			ask to TWA for example variety	
QN		short					3
		medium					5
		tall					7
43.	**69 MS/ VG**	**Plant: diameter of main stem (not for vegetable mustard)**	DE: not necessary for agricultural varieties **JP: We would like to delete this characteristic because we don't have experience for this characteristic**			ask to TWA for example variety	
QN		narrow					3
		medium					5
		broad					7
44.	**69 MS/ VG**	**Plant: number of internodes (after flowering) (not for vegetable mustard)**	DE: not necessary for agricultural varieties **JP: We would like to delete this characteristic because we don't have experience for this characteristic**			ask to TWA for example variety	
QN		few					3
		medium					5
		many					7
45.	**75 VG**	**Siliqua: color ~~for~~ before drying (not for vegetable mustard)**	DE: not necessary for agricultural varieties **JP: We would like to delete this characteristic because we don't have experience for this characteristic**			ask to TWA for example variety	
QN		light green					1
		green					2
		dark green					3
46.	**79 - 89 MS/ VG**	**Siliqua: length between stalk and beak (not for vegetable mustard)**	DE: propose to use the same wording as for Sinapis alba guideline (UPOV TG 179/3) Char. No 17: Siliqua: length (between peduncle and beak).			ask to TWA for example variety	
QN		short					3
		medium					5
		long					7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
47.	**79 - 89 MS/ VG**	**Siliqua: width (not for vegetable mustard)**				ask to TWA for example variety	
QN		narrow					3
		medium					5
		broad					7
48.	**79 - 89 MS/ VG**	**Siliqua: length of beak (not for vegetable mustard)**				ask to TWA for example variety	
QN		short					3
		medium					5
		long					7
49.	**79 - 89 MS/ VG**	**Siliqua: length of pedicel (not for vegetable mustard)**	DE: propose to use the same wording as for Sinapis alba guideline (UPOV TG 179/3) Char. No 20: Siliqua : length of peduncle.			ask to TWA for example variety	
QN		short					3
		medium					5
		long					7
50.	**79 VG**	**Siliqua: attitude (not for vegetable mustard)**	DE: not necessary for agricultural varieties **JP: We would like to delete this characteristic because we don't have experience for this characteristic**			ask to TWA for example variety	
QN		erect					1
		horizontal					2
		drooping					3

DE Propose to have another characteristic Seed: color, expression yellowish (1) blackish brown (2), QL, VG, Stage 89 to 99, example varieties (Fotos will be checked)

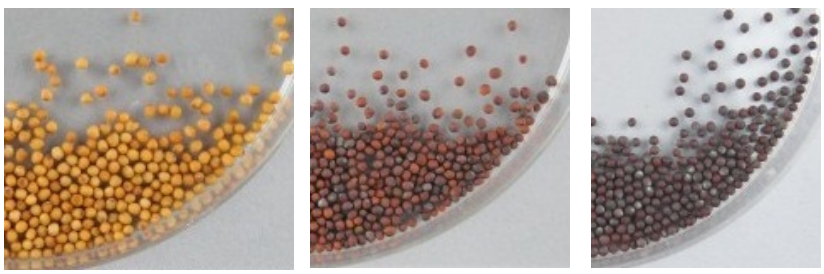
NL proposal Seed: Color
1 whitish
2 yellow
3 yellow brown
4 brown
5 red brown
6 red
7 black

JP to DE: Are your proposal of stage correct?
We recognize stage 89 to 99 which has possibility of metamorphosed variety. Therefore we have to observe stage 0 and it can be observed original color of the variety.

JP to NL: Your proposal is too much expression which is confused classification of the color. For example yellow – yellow brown – brown – red brown. If you would like to set this expression, please provide example variety and photograph of several varieties.

JP proposal:

Seed: Color
Stage 00
PQ/VG
1 yellow



2 brown
3 black

After characteristic 20 Leaf blade: anthocyanin coloration
23 Only for varieties with Leaf blade: anthocyanin coloration: Leaf blade: division of anthocyanin coloration

1 local
2 entire

explanation


1 local 2 entire

JP to NL: It might be not stable for local variety. In our DUS test, distribution of anthocyanin is depended on the environment or variety. Of course we know there is stable variety too.
Therefore we can't accept NL proposal.

DUS trial in Japan: in case of not stable distribution.

After 38 **Plant: height at flowering (at full flowering)**
PQ/VG
Flower: Color of petals
1 White
2 Light yellow
3 Yellow
4 Orange

We have not seen the expressions white and orange yet. But they are used (without example varieties in a protocol, therefore we would like to ask if any one knows any examples, and if there are add the characteristic with the expressions white and orange.

JP to NL: Also we have never seen withe and orange color. It will be discussed in Nagasaki.

8. Explanations on the Table of Characteristics

Ad. 4: Hypocotyl: anthocyanin coloration

1
absent or weak

2
medium

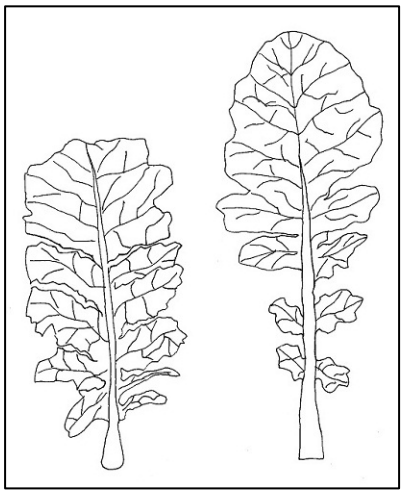
3
strong

Ad. 7: Cotyledon: anthocyanin coloration

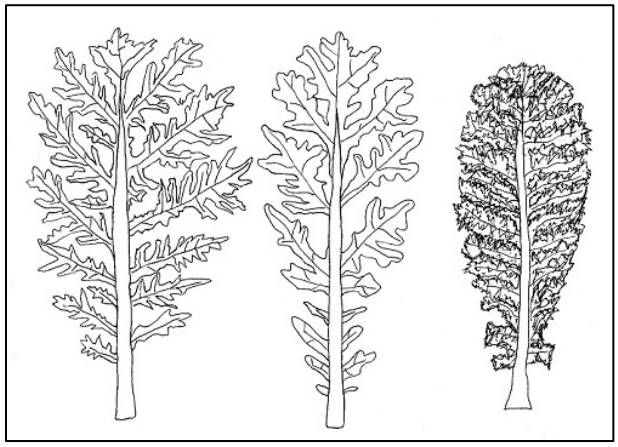
1
absent or weak

3
strong

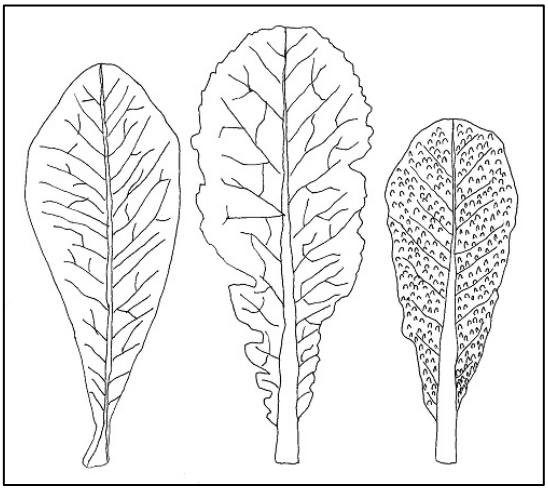
Ad. 8: Leaf: type



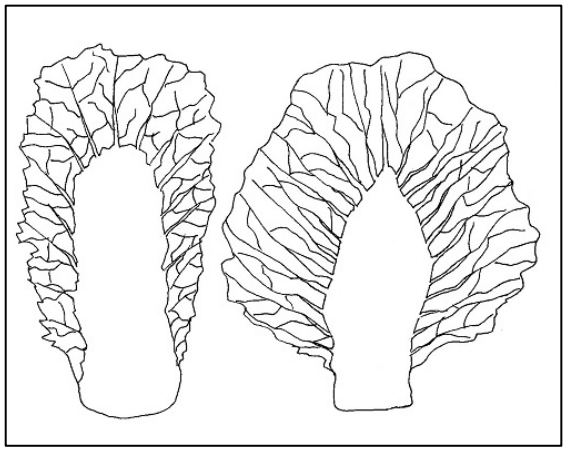
1
type1
(lyrate)



2
type2
(division)

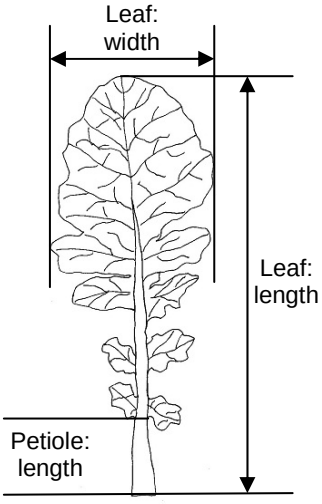


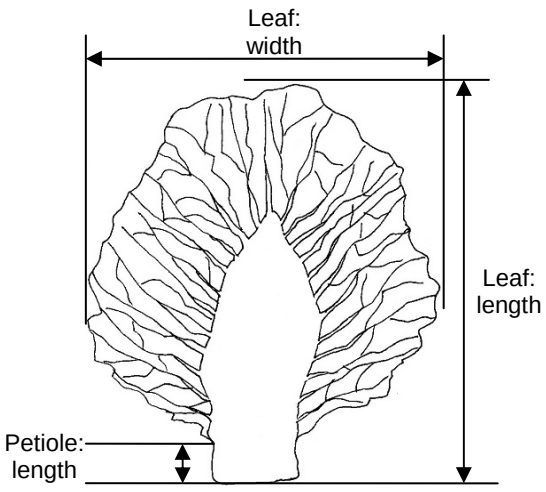
3
type3
(entire and narrow midrib)



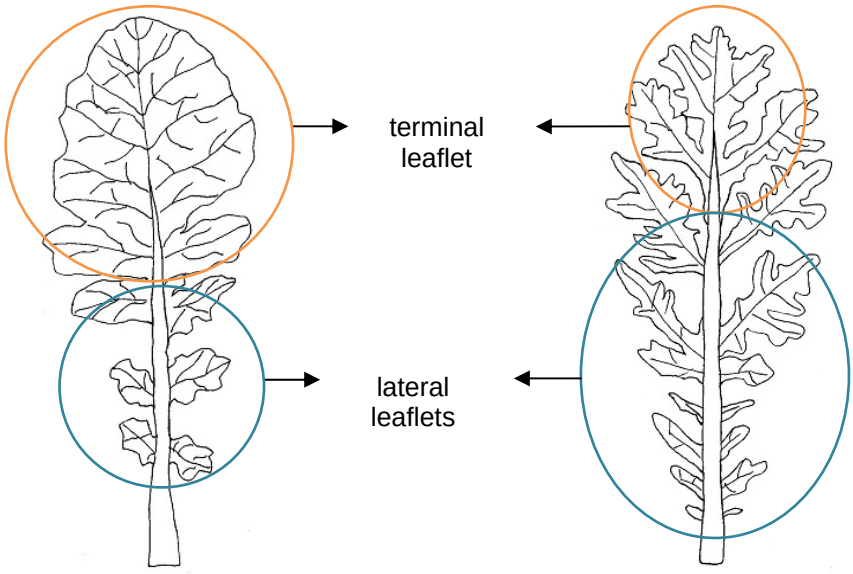
4
type4
(entire and broad midrib)

Ad. 10: Leaf: length (include petiole)
Ad. 11: Leaf: width
Ad. 12: Leaf: length of petiole

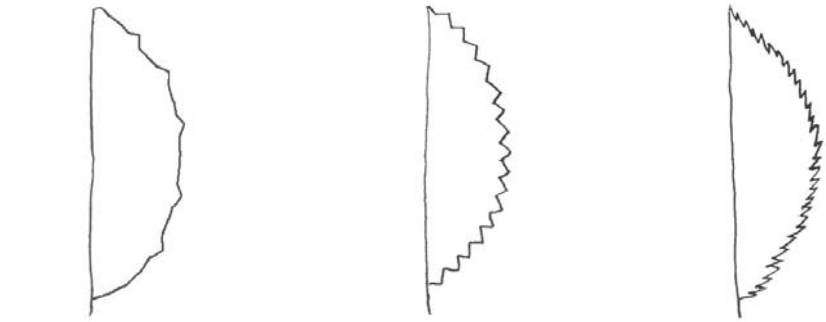




Ad. 17: Leaf blade: size of terminal leaflet (only variety with leaf type 1 or type2)
Ad. 18: Leaf blade: number of lateral leaflets (only variety with leaf type 1 or type2)



Ad. 22: Leaf blade: density of incision of margin



1
absent or sparse

2
medium

3
dense

Ad. 24: Leaf blade: blistering

3
weak

Japan: to be provided photograph for state 5

5
medium

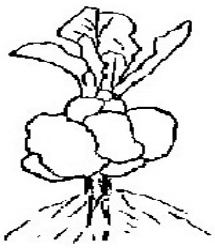
7
strong

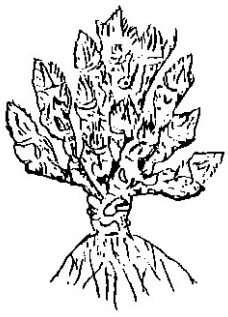
Ad. 25: Leaf blade: shape of apex

Ad. 28: Stem: type of main stem (exclude head type)







1
type1
(no enlarged)

2
type2
(laterally enlarged)

3
type3
(longitudinally enlarged)

4
type4
(budding enlarged)

KEY FOR THE STAGE OF DEVELOPMENT

KEY	GENERAL DESCRIPTION
0	Principal growth stage 0: Germination

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
1	Principal growth stage 1: Leaf development
10	Cotyledons completely unfolded
11	First leaf unfolded
12	2 leaves unfolded
13	3 leaves unfolded
14	4 leaves unfolded
15	5 leaves unfolded
16	6 leaves unfolded
17	7 leaves unfolded
18	8 leaves unfolded
19	9 or more leaves unfolded
2	Principal growth stage 2: Formation of side shoots
20	No side shoots
21	first side shoot detectable
22	2 side shoots detectable
23	3 side shoots detectable
24	4 side shoots detectable
25	5 side shoots detectable
26	6 side shoots detectable
27	7 side shoots detectable
28	8 side shoots detectable
29	9 or more side shoots detectable
3	Principal growth stage 3: Stem elongation
30	no internodes (“rosette”)
31	1 visibly extended internode
32	2 visibly extended internode
33	3 visibly extended internode
34	4 visibly extended internode
35	5 visibly extended internode
36	6 visibly extended internode
37	7 visibly extended internode
38	8 visibly extended internode
39	9 or more visibly extended internodes
4	Principal growth stage 4: Development of head
41	the two youngest leaves do not unfold
42	20% of the expected head size reached
43	30% of the expected head size reached
44	40% of the expected head size reached
45	50% of the expected head size reached
46	60% of the expected head size reached
47	70% of the expected head size reached
48	80% of the expected head size reached
49	Typical size, form and firmness of heads reached
5	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”)

6	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
7	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
8	Principal growth stage 8: Ripening
80	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
9	Principal growth stage 9: Senescence
97	Plant dead and dry
99	Harvested product

9. Literature

Ministry of Agriculture, Forestry & Fisheries of Japan., 1994: National Test Guideline for Karashina.

Tsukamoto, Y., 1994: The Grand Dictionary of Horticulture Volume 1. The Shogakukan Ltd., Tokyo, Japan, pp. 520 to 522.

Takasi A., 2004: Yasai-engei-daihyakka 17. Shadanhojin Nousan-gyoson-bunkakyokai. Tokyo, Japan. 169-233

Fujishiro, T., 1996: Breeding processes and characteristics of a newly bred leaf mustard (*Brassica Juncea* Coss.)., Kanagawa, Japan.

Uwe Meier. Federal Biological Research Centre for Agriculture and Forestry, 2001: Growth stages of mono- and dicotyledonous plants, BBCH Monograph,

Roger Phillips, Martyn Rix., 1993: VEGETABLES (The Pan Garden Plants Series) p.44

Joy Larkcom., 1991: Oriental Vegetables (The Complete guide for Garden and Kitchen) London, United Kingdom. pp. 39 to 45

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

1. Subject of the Technical Questionnaire

1.1 Botanical name	*Brassica juncea* (L.) Czern
1.2 Common name	Brown Mustard

2. Applicant

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

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

3. Proposed denomination and breeder's reference

Proposed denomination (if available)

Breeder's reference

[#]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 varieties)

(……..……..) 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:

4.2 Method of propagating the variety

"4.2.1 Seed-propagated varieties

"(a) Self-pollination [ ]
"(b) Cross-pollination
(i) population [ ]
(ii) synthetic variety [ ]
"(c) Hybrid [ ]
"(d) Other [ ]
(please provide details)"

"4.2.2 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 line male line

(……..……..) 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 (6)	**Cotyledon: anthocyanin coloration**		
	absent	Kigarasina	1 [ ]
	present	Akariasu	9 [ ]
5.2 (7)	**Leaf: type**		
	type1	Kigarashina	1 [ ]
	type2	Riasu karashina	2 [ ]
	type3	Katsuona	3 [ ]
	type4	Miike takana	4 [ ]
5.3 (18)	**Leaf blade: anthocyanin coloration**		
	absent or very weak	Kekkyu takana	1 [ ]
	weak	Kigarashina	3 [ ]
	medium	Miike takana	5 [ ]
	strong	Akaoba takana	7 [ ]
5.4 (20)	**Leaf blade: density of incision of margin**		
	absent or sparse	Katsuona	1 [ ]
	medium	Junkei yamashiona	2 [ ]
	dense	Chirimen hakarashina	3 [ ]
5.5 (22)	**Leaf blade: blistering**		
	weak	Kigarashina	3 [ ]
	medium		5 [ ]
	strong	Katsuona	7 [ ]
5.6 (23)	**Leaf blade: shape of apex**		
	acute	Nagasaki takana	1 [ ]
	obtuse	Katsuona	2 [ ]
	rounded	Miike takana	3 [ ]

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

5.7 (29)	**Head: formation**		
	no heading	Kigarashina	1 [ ]
	heading	Kekkyu takana	2 [ ]
5.8 (33)	**Head: color of inside (heading type only)**		
	yellowish white	Unzen kekkyu takana	1 [ ]
	light green		2 [ ]
	green	Kekkyu takana	3 [ ]

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	*Leaf blade: shape of apex*	*acute*	*obtuse*

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 Main use

(a)	vegetable	[ ]
(b)	seed	[ ]
(c)	other (please provide details)	[ ]

A representative color image of the variety should accompany 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.

[#] 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:

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]