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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

CHINESE CABBAGE

UPOV Code(s): BRASS_RAP_PEK; BRASS_RAP_PCH;
BRASS_RAP_PRA; BRASS_TUR

Brassica rapa L. subsp. *pekinensis* (Lour.) Kitam.;
hybrids between *Brassica rapa* L. Emend. Metzg. ssp. *pekinensis*
(Lour.) Hanelt and *Brassica rapa* L. Emend. Metzg. ssp.
chinensis (L.) Hanelt;
hybrids between *Brassica rapa* L. Emend. Metzg. ssp. *pekinensis*
(Lour.) Hanelt and *Brassica rapa* L. var. *rapa* (L.) Thell.;
Brassica x turicensis O. E. Schulz & Thell.

GUIDELINES**FOR THE CONDUCT OF TESTS****FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

*prepared by experts from the Republic of Korea
to be considered by the
Technical Working Party for Vegetables
at its fifty-seventh session, to be held in Antalya, Türkiye,
from 2023-05-01 to 2023-05-05*

Disclaimer: this document does not represent UPOV policies or guidance

* 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.]

Alternative names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Brassica rapa</i> L. subsp. <i>pekinensis</i> (Lour.) Kitam. , <i>Brassica campestris</i> subsp. <i>pekinensis</i> (Lour.) G. Olsson, <i>Brassica pekinensis</i> (Lour.) Rupr., <i>Brassica</i> <i>pe-tsai</i> L. H. Bailey, <i>Brassica rapa</i> subvar. <i>pe-tsai</i> (L. H. Bailey) Kitam., <i>Brassica rapa</i> var. <i>glabra</i> Regel, <i>Sinapis pekinensis</i> Lour.	Chinese Cabbage	Chou chinois	Chinakohl	Repollo chino
hybrids between <i>Brassica rapa</i> L. Emend. Metzg. ssp. <i>pekinensis</i> (Lour.) Hanelt and <i>Brassica</i> <i>rapa</i> L. Emend. Metzg. ssp. <i>chinensis</i> (L.) Hanelt				
hybrids between <i>Brassica rapa</i> L. Emend. Metzg. ssp. <i>pekinensis</i> (Lour.) Hanelt and <i>Brassica</i> <i>rapa</i> L. var. <i>rapa</i> (L.) Thell.				
<i>Brassica x turicensis</i> O. E. Schulz & Thell. , <i>Brassica juncea</i> x <i>Brassica rapa</i> ssp. <i>Pekinensis</i>				

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.

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Brassica rapa* L. subsp. *pekinensis* (Lour.) Kitam., hybrids between *Brassica rapa* L. Emend. Metzg. ssp. *pekinensis* (Lour.) Hanelt and *Brassica rapa* L. Emend. Metzg. ssp. *chinensis* (L.) Hanelt, hybrids between *Brassica rapa* L. Emend. Metzg. ssp. *pekinensis* (Lour.) Hanelt and *Brassica rapa* L. var. *rapa* (L.) Thell. and *Brassica xturicensis* O. E. Schulz & Thell.

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:

10 g or 2,000 seeds

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should, be stated by the applicant.

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

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 *Number of Growing Cycles*

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

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

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

3.2 *Testing Place*

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 "Examining Distinctness".

3.3 *Conditions for Conducting the Examination*

The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 60 plants, which should be divided between at least 2 replicates.

3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 *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 or 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 of plants taken from each of 20 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 Table of Characteristics (see document TGP/9 "Examining Distinctness", Section 4 "Observation of characteristics"):

MG: single measurement of a group of plants or parts of plants

MS: measurement of a number of individual plants or parts of plants

VG: visual assessment by a single observation of a group of plants or parts of plants

VS: visual assessment by observation of individual plants or parts of plants

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

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

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

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

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

4.2 *Uniformity*

- 4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:
- 4.2.2 These Test Guidelines have been developed for the examination of seed-propagated varieties including cross-pollinated and hybrid varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.
- 4.2.3 The assessment of uniformity should be according to the recommendations for cross-pollinated varieties in the General Introduction.
- 4.2.4 For the assessment of uniformity of single cross hybrid 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 60 plants, 2 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.

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) Plant: height (characteristic 2)
 - (b) Head: shape in longitudinal section (characteristic 24)
 - (c) Head: degree of closing of leaves (characteristic 25)
 - (d) Time of harvest maturity (characteristic 32)
- 5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 "Examining Distinctness".

6. Introduction to the Table of Characteristics

6.1 *Categories of Characteristics*

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 *States of Expression and Corresponding Notes*

6.2.1 States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.2.2 All relevant states of expression are presented in the characteristic.

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 "Development of Test Guidelines".

6.3 *Types of Expression*

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 *Example Varieties*

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

6.5 Legend

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

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression

QL Qualitative characteristic – see Chapter 6.3

QN Quantitative characteristic – see Chapter 6.3

PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)

MG, MS, VG, VS – see Chapter 4.1.5

5 (+) See Explanations on the Table of Characteristics in Chapter 8.2

6 (a)-(c) See Explanations on the Table of Characteristics in Chapter 8.1

7 Not applicable

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	QN	VG	(+)	(a)		
	Plant: habit					
	erect				Golden boy, Granaat	1
	semi-erect				Bilko, Daetong, Muso	2
	spreading				Lycofresh Gimjang	3
2. (*)	QN	MS/VG	(a)			
	Plant: height					
	very short					1
	very short to short					2
	short				Natsuki, TheHan1ho	3
	short to medium					4
	medium				Bilko, Daetong, Muso	5
	medium to tall					6
	tall				Monument, Shousai, Wonkyo20036ho	7
	tall to very tall					8
	very tall					9
3.	QN	MS/VG	(a)			
	Outer leaf: length					
	very short					1
	very short to short					2
	short				Golden boy, Summer Salad, TheHan1ho	3
	short to medium					4
	medium				Daetong, Muso	5
	medium to long					6
	long				Shousai, Wonkyo20036ho	7
	long to very long					8
	very long					9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4.	QN	MS/VG	(+)	(a)		
	Outer leaf: width					
	very narrow					1
	very narrow to narrow					2
	narrow				Jinhongssam, Summer Salad	3
	narrow to medium					4
	medium				Daetong, Muso	5
	medium to broad					6
	broad				Bando, Lycofresh Gimjang	7
	broad to very broad					8
	very broad					9
5. (*)	PQ	VG	(+)	(a)		
	Outer leaf: shape					
	circular				Bingsu, Kenshin	1
	broad obovate				Daetong, Kaho	2
	medium obovate				Muso, Suho	3
	narrow obovate				Lycofresh Gimjang	4
	elongated obovate				Shousai, Wonkyo20036ho	5
6.	PQ	VG	(+)	(a)		
	Outer leaf: shape of apex					
	obtuse				Shousai	1
	rounded				Daetong, Muso	2
	truncated				Lycofresh Gimjang, Ousho	3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
7. (*)	QN	VG	(a)			
	Outer leaf: number of blisters on upper side					
	very few					1
	very few to few					2
	few				Granaat, Kinap, Sprinter	3
	few to medium					4
	medium				Daetong, Muso, Parkin	5
	medium to many					6
	many				Enduro, Jindaebak, Ming	7
	many to very many					8
	very many					9
8.	QN	VG	(+)	(a)		
	Outer leaf: size of blisters on upper side					
	very small					1
	very small to small					2
	small				Granaat	3
	small to medium					4
	medium				Daetong, Parkin	5
	medium to large					6
	large				Bingsu, Enduro	7
	large to very large					8
	very large					9
9. (*)	QL	VG	(a)			
	Outer leaf: main color					
	green				Daetong, EX King santosai, Hayamidori, Kaho, Muso, Parkin, Sprinkin	1
	purple				Jinhongssam, Kwonnongppalgang, Red Dragon	2

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10.	QN	VG	(a)				
	Outer leaf : Intensity of color						
		very light				EX King santosai	1
		very light to light					2
		light				Kaho, Red Dragon	3
		light to medium					4
		medium				Daetong, Kwonnongppalgang, Muso, Sprinkin	5
		medium to dark					6
		dark				Hayamidori, Jinhongssam, Parkin, TheHan1ho	7
		dark to very dark					8
		very dark					9
11.	QN	VG	(a)				
	Outer leaf: glossiness						
		very weak					1
		very weak to weak					2
		weak				Hanko, Kaho, Kinap	3
		weak to medium					4
		medium				Daetong, Muso	5
		medium to dark					6
		strong				Shunjyu	7
		dark to very dark					8
		very dark					9
12.	QN	VG	(+)	(a)			
	Outer leaf: hairiness						
		absent or very weak				Bingsu, Summer Salad	1
		weak				Cream, Kinap	2
		medium				Daetong, Shunjyu, Tardisto	3
		strong				Jinhongssam, Muso	4
		very strong					5

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13.	QN	VG	(+)	(a)				
	Outer leaf: profile in longitudinal section							
	concave						Bilko, Parkin	1
	straight						Daetong, Monument	2
	convex						Hanko	3
14.	QN	VG	(+)	(a)				
	Outer Leaf: undulation of margin							
	absent or very weak							1
	weak						Jinhongssam, Kaho, Red Dragon	2
	medium						Hanko, Suho	3
	strong						Monument	4
	very strong						Shin-aduma, Wonkyo20036ho	5
15.	QN	VG	(+)	(a)				
	Outer leaf: incisions of margin on distal part							
	absent or weak						Hanko, Jinhongssam, Kenshin	1
	medium						Kasumi, Lycofresh Gimjang	2
	strong						Wonkyo20036ho	3
16.	QN	VG	(+)	(a)				
	Outer leaf: dentation of margin on basal part							
	absent or weak						Hanko, Jinhongssam, Kinap	1
	weak to medium							2
	medium						Daetong, Enduro	3
	medium to strong							4
	strong						Sinrok Utgari, Wonkyo20036ho	5

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17.	QN	MS/VG	(+)	(a)		
	Outer leaf: length of midrib					
	very short					1
	very short to short					2
	short				Hamamidori	3
	short to medium					4
	medium				Daetong, Muso	5
	medium to long					6
	long				RCC65, Shousai, Wonkyo20036ho	7
	long to very long					8
	very long					9
18.	QN	MS/VG	(+)	(a)		
	Outer leaf: width of midrib					
	very narrow					1
	very narrow to narrow					2
	narrow				Shousai, Wonkyo20036ho	3
	narrow to medium					4
	medium				Enduro, Jinhongssam, Red Dragon	5
	medium to broad					6
	broad				Gorki, Harumaki 1 go, Jindaebak	7
	broad to very broad					8
	very broad					9
19.	QN	VG	(+)	(a)		
	Outer leaf: midrib in cross section					
	flat				Hanko, Kinap, Suho	1
	flat to concave				Lycofresh Gimjang	2
	concave				Bilko, Jinhongssam, Parkin	3

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20.	QN	MS/VG	(+)	(a)				
	Outer leaf: thickness of midrib							
	thin						RCC65	1
	thin to medium							2
	medium						Daetong	3
	medium to thick							4
	thick						Jinhongssam	5
21.	PQ	VG	(+)	(a)				
	Outer leaf: color of midrib							
	white						Daetong, Lycofresh Gimjang, Muso	1
	green						Jincai3, Jinlv60	2
	purple						RCC65, Red Dragon	3
22.	QN	MS/VG		(b)				
	Head: height							
	very short							1
	very short to short							2
	short						Golden boy	3
	short to medium							4
	medium						Muso, Parkin, Sprinkin, Suho	5
	medium to tall							6
	tall						Jinhongssam, Monument, Shousai	7
	tall to very tall							8
	very tall							9

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
23.	QN	MS/VG	(+)	(b)				
	Head: width							
	very narrow							1
	very narrow to narrow							2
	narrow					Granaat, Jinhongssam		3
	narrow to medium							4
	medium					Muso, TheHan1ho		5
	medium to broad							6
	broad					Jindaebak		7
	broad to very broad							8
	very broad							9
24. (*)	PQ	VG	(+)	(b)				
	Head: shape in longitudinal section							
	circular					Kenshin		1
	elliptic					Hayamidori, TheHan1ho		2
	ovate					Daetong, Shinjyu		3
	obovate					Gorki, Hamamidori		4
	oblong					Chushu, Golden boy, Hanko		5
	narrow oblong					Granaat, Jinhongssam, Shousai		6
25. (*)	QN	VG	(+)	(b)				
	Head: degree of closing of leaves							
	open					Jinhongssam		1
	open to half-open							2
	half-open					Daetong, Spectrum		3
	half-open to closed							4
	closed					Golden boy, Kinap, Muso		5
26.	PQ	VG		(b)				
	Head: color of top							
	white					Xinxiashuai		1
	yellow green					Bingsu, Kasumi		2
	green					Daetong, Lycofresh Gimjang, Muso		3
	dark green					Bando		4
	purple					Jinhongssam, Red Dragon		5

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27.	QN	VG	(+)	(b)				
	Head: blistering of wrapper leaf							
	absent or very weak							1
	weak						Granaat	2
	medium						Gorki, Jinhongssam	3
	strong						Daetong, Enduro	4
	very strong						TheHan1ho	5
28. (*)	PQ	VG	(+)	(b)				
	Head: internal color							
	whitish						Bilko, Parkin	1
	light yellow						Golden boy	2
	medium yellow						Daetong, Enduro, Hanko	3
	dark yellow						TheHan1ho	4
	orange						Orange Queen	5
	purple						Jinhongssam, Red Dragon	6
29.	QN	VG		(b)				
	Head: firmness							
	very loose						Jinhongssam	1
	very loose to loose							2
	loose						Granaat, RCC65	3
	loose to medium							4
	medium						Gorki, Lycofresh Gimjang	5
	medium to firm							6
	firm						Bando, Bazuko, Suho	7
	firm to very firm							8
	very firm						Shunjyu	9
30.	PQ	VG	(+)	(b)				
	Head: shape of apex of internal stem							
	pointed						Kaho, Wonkyo20036ho	1
	round						Bilko, Muso, Parkin	2
	truncate						Jindaebak, Syunju	3

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
31.	QL	VG	(+)	(b)				
	Head: coloration in vascular bundle of internal stem							
	absent						Daetong	1
	present						Betafresh	9
32. (*)	QN	MG/VG	(b)					
	Time of harvest maturity							
	very early						Kenshin	1
	very early to early							2
	early						Blues, RCC65, Sprinkin	3
	early to medium							4
	medium						Enduro, Muso, Suho	5
	medium to late							6
	late						Chusyu, Jindaebak, Parkin, Red Dragon	7
	late to very late							8
	very late							9
33.	QL	VG	(+)	(c)				
	Male sterility							
	absent						Kasumi, Suho	1
	present						Cheonggwang, Hanko, Red Dragon	9

8. Explanations on the Table of Characteristics

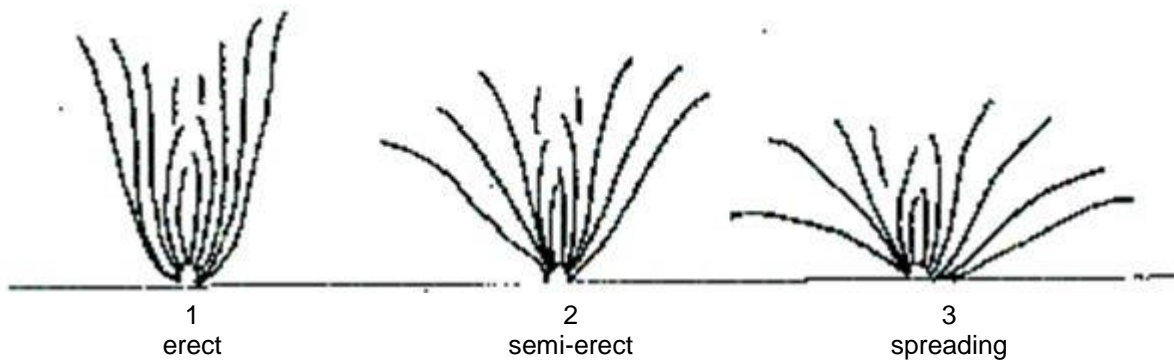
8.1 *Explanations covering several characteristics*

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

- (a) Observation should be made at the beginning of head formation, before harvest maturity.
- (b) Observations should be made at harvest maturity.
- (c) Observations should be made at the flowering period

8.2 *Explanations for individual characteristics*

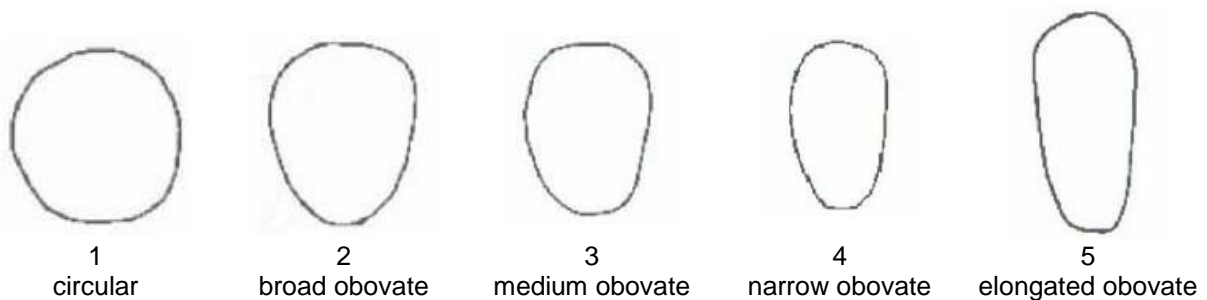
Ad. 1: Plant: habit



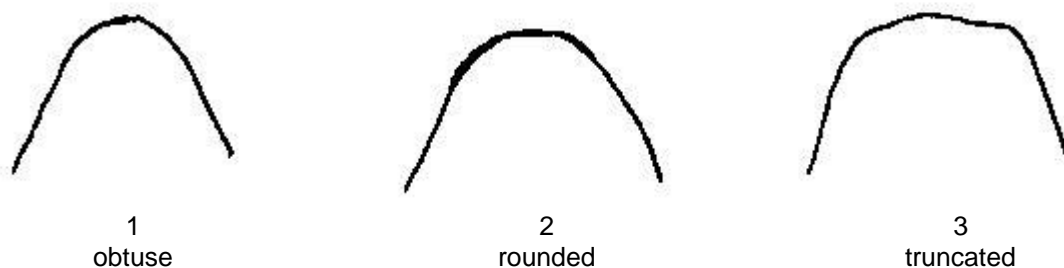
Ad. 4: Outer leaf: width

Observation should be made on the broadest part.

Ad. 5: Outer leaf: shape



Ad. 6: Outer leaf: shape of apex



Ad. 8: Outer leaf: size of blisters on upper side



3
small



5
medium



7
large

Ad. 12: Outer leaf: hairiness

Observations should be made on the lower side.

Ad. 13: Outer leaf: profile in longitudinal section

Observations should be excluding leaf base.

Ad. 14: Outer Leaf: undulation of margin



2. weak

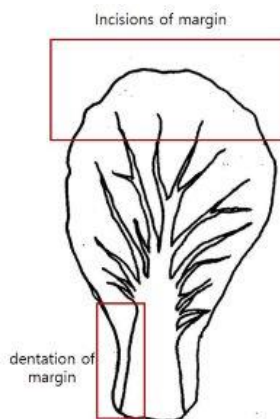
3. medium

4. strong

5. very strong

Ad. 15: Outer leaf: incisions of margin on distal part

Observation should be made on distal part of leaf.



1. absent or weak



2. medium



3. strong

Ad. 16: Outer leaf: dentation of margin on basal part

See Ad. 15

Observations should be made on the base part of leaf.



1
absent or weak

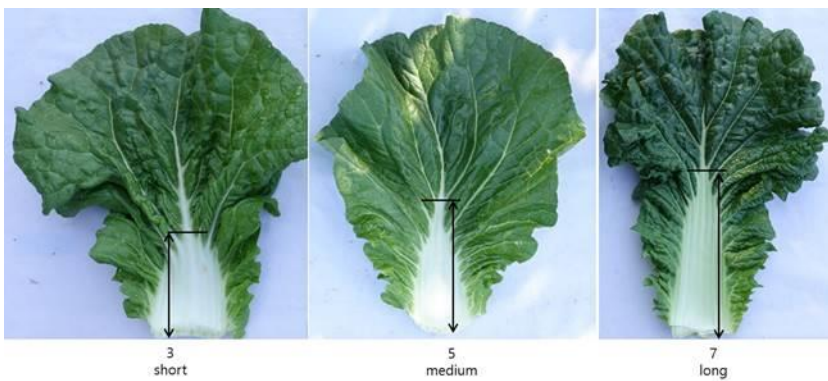
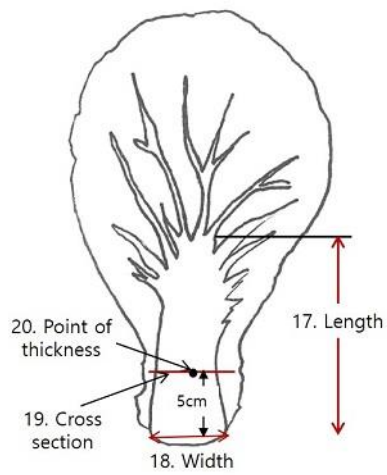


3
medium



5
strong

Ad. 17: Outer leaf: length of midrib



Ad. 18: Outer leaf: width of midrib

See Ad.17

Ad. 19: Outer leaf: midrib in cross section

See Ad.17

Observation should be made at 4~6cm from leaf base



1
flat



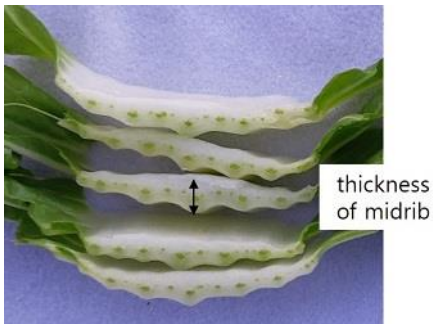
2
flat to concave



3
concave

Ad. 20: Outer leaf: thickness of midrib

Observations should be made at the midpoint of the midrib where the characteristic 19 is observed.








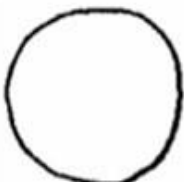
Ad. 21: Outer leaf: color of midrib

Observations should be made on inner side of leaf

Ad. 23: Head: width

Observations should be made on the broadest part.

Ad. 24: Head: shape in longitudinal section

		← broadest part →		
		below middle	at middle	above middle
relative width	↑ narrow		 6 narrow oblong	
	↑		 5 oblong	
	↓	 3 ovate	 2 elliptic	 4 obovate
	↓ broad		 1 circular	

Ad. 25: Head: degree of closing of leaves



1
open



3
half-open



5
closed

Ad. 27: Head: blistering of wrapper leaf



1
absent or very weak

2
weak

3
medium

4
strong

5
very strong

Ad. 28: Head: internal color

Observations should be made on upper part in longitudinal section.

Ad. 30: Head: shape of apex of internal stem



1
pointed



2
round



3
truncate

Ad. 31: Head: coloration in vascular bundle of internal stem



1
absent



9
present

Ad. 33: Male sterility

To be tested in a field trial.

Check presence of pollen on stamen: if pollen on stamen is present then male sterility is absent; if pollen on stamen is absent then male sterility is present.



1
absent



9
present

9. Literature

Shogakukan, 1991: The Grand Dictionary of Horticulture. pp.560-563

Tsunoda, S., Hinata, K., and Gommez-Campo, C., 1980: Brassica Crops and Wild Allies - Biology and Breeding. Japan Scientific Press, Tokyo

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		
1.1.1 Botanical name	<input style="width: 90%;" type="text" value="Brassica rapa L. subsp. pekinensis (Lour.) Kitam."/>	[]
1.1.2 Common name	<input style="width: 90%;" type="text" value="Chinese Cabbage"/>	
1.2.1 Botanical name	<input style="width: 90%;" type="text" value="hybrids between Brassica rapa L. Emend. Metzg. ssp. pekinensis (Lour.) Hanelt and Brassica rapa L. Emend. Metzg. ssp. chinensis (L.) Hanelt"/>	[]
1.2.2 Common name	<input style="width: 90%;" type="text"/>	
1.3.1 Botanical name	<input style="width: 90%;" type="text" value="hybrids between Brassica rapa L. Emend. Metzg. ssp. pekinensis (Lour.) Hanelt and Brassica rapa L. var. rapa (L.) Thell."/>	[]
1.3.2 Common name	<input style="width: 90%;" type="text"/>	
1.4.1 Botanical name	<input style="width: 90%;" type="text" value="Brassica x turicensis O. E. Schulz & Thell."/>	[]
1.4.2 Common name	<input style="width: 90%;" type="text"/>	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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2.	Applicant	
	Name	<input type="text"/>
	Address	<input type="text"/>
	Telephone No.	<input type="text"/>
	Fax No.	<input type="text"/>
	E-mail address	<input type="text"/>
	Breeder (if different from applicant)	<input type="text"/>

3.	Proposed denomination and breeder's reference	
	Proposed denomination (if available)	<input type="text"/>
	Breeder's reference	<input type="text"/>

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross []

(please state parent variety)

(.....) x (.....)

female parent male parent

(b) partially known cross []

(please state known parent variety(ies))

(.....) x (.....)

female parent male parent

(c) unknown cross []

4.1.2 Mutation []

(please state parent variety)

4.1.3 Discovery and development []

(please state where and when discovered and how developed)

4.1.4 Other []

(Please provide details)

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

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

- (a) Cross-pollination []
 - (i) Population []
 - (ii) Synthetic variety []
 - (i) Single hybrid []
- (b) Hybrid []
 - (ii) Three-way hybrid []
 - (iii) Double hybrid []
- (c) []
- (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 lines required for propagating the hybrid, e.g.

Single Hybrid (SH)
(...female parent...) x (...male parent...)

Three-Way Hybrid (3WH)
(...female line...) x (...male line...)
=> single hybrid used as female parent x (...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:
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5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).		
Characteristics	Example Varieties	Note
5.1 Plant: height (2)		
very short		1 []
very short to short		2 []
short	Natsuki, TheHan1ho	3 []
short to medium		4 []
medium	Bilko, Daetong, Muso	5 []
medium to tall		6 []
tall	Monument, Shousai, Wonkyo20036ho	7 []
tall to very tall		8 []
very tall		9 []
5.2 Head: shape in longitudinal section (24)		
circular	Kenshin	1 []
elliptic	Hayamidori, TheHan1ho	2 []
ovate	Daetong, Shinjyu	3 []
obovate	Gorki, Hamamidori	4 []
oblong	Chushu, Golden boy, Hanko	5 []
narrow oblong	Granaat, Jinhongssam, Shousai	6 []
5.3 Head: degree of closing of leaves (25)		
open	Jinhongssam	1 []
open to half-open		2 []
half-open	Daetong, Spectrum	3 []
half-open to closed		4 []
closed	Golden boy, Kinap, Muso	5 []
5.4 Time of harvest maturity (32)		
very early	Kenshin	1 []
very early to early		2 []
early	Blues, RCC65, Sprinkin	3 []
early to medium		4 []
medium	Enduro, Muso, Suho	5 []
medium to late		6 []
late	Chusyu, Jindaebak, Parkin, Red Dragon	7 []
late to very late		8 []
very late		9 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
<i>Example</i>	<i>Head : degree of closing of leaves</i>	<i>half-open</i>	<i>closed</i>
Comments:			

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes No

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes No

(If yes, please provide details)

7.3 Other information

A representative color photograph of the variety displaying its main distinguishing feature(s), should accompany the Technical Questionnaire. The photograph will provide a visual illustration of the candidate variety which supplements the information provided in the Technical Questionnaire.

The key points to consider when taking a photograph of the candidate variety are:

- Indication of the date and geographic location
- Correct labeling (breeder's reference)
- Good quality printed photograph (minimum 10 cm x 15 cm) and/or sufficient resolution electronic format version (minimum 960 x 1280 pixels)

Further guidance on providing photographs with the Technical Questionnaire is available in document TGP/7 "Development of Test Guidelines", Guidance Note 35 (<http://www.upov.int/tgp/en/>).

[The link provided may be deleted by members of the Union when developing authorities' own test guidelines.]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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8. Authorization for release

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

Yes No

(b) Has such authorization been obtained?

Yes No

If the answer to (b) is yes, please attach a copy of the authorization.

9. Information on plant material to be examined or submitted for examination

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

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

Please provide details for where you have indicated "yes".

.....

9.3 Has the plant material to be examined been tested for the presence of virus or other pathogens?

Yes

(please provide details as specified by the Authority)

No

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant's name

Signature Date