



TG/105/5(proj.2)

ORIGINAL: English

DATE: 2022-03-07

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-sixth session, to be held virtually,
from 2022-04-18 to 2022-04-22*

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</i> <i>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.

* 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.....	4
2. MATERIAL REQUIRED.....	4
3. METHOD OF EXAMINATION.....	4
3.1 Number of Growing Cycles.....	4
3.2 Testing Place.....	4
3.3 Conditions for Conducting the Examination.....	4
3.4 Test Design.....	6
3.5 Additional Tests.....	6
4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY.....	6
4.1 Distinctness.....	6
4.2 Uniformity.....	7
4.3 Stability.....	7
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL.....	8
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS.....	8
6.1 Categories of Characteristics.....	8
6.2 States of Expression and Corresponding Notes.....	8
6.3 Types of Expression.....	8
6.4 Example Varieties.....	8
6.5 Legend.....	10
7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES.....	11
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS.....	24
8.1 Explanations covering several characteristics.....	24
8.2 Explanations for individual characteristics.....	25
9. LITERATURE.....	32
10 TECHNICAL QUESTIONNAIRE.....	33

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: type (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						Bando	3
2. (*)	QN	MS/VG		(a)				
	Plant: height							
	very short							1
	very short to short							2
	short						Natsuki	3
	short to medium							4
	medium						Bilko, Daetong, Muso	5
	medium to tall							6
	tall						Monument, Shousai	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						Salad, TheHan1ho	3
	short to medium							4
	medium						Daetong, Muso	5
	medium to long							6
	long						Shousai	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, 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						Kenshin	1
	broad obovate						Daetong, Kaho	2
	obovate						Muso, Suho	3
	narrow obovate						Bando, Lycofresh Gimjang	4
	narrow elliptic						Shousai	5
6.	PQ	VG	(+)	(a)				
	Outer leaf: 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					Bando, 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					Enduro	7
	large to very large						8
	very large						9
9. (*)	PQ	VG	(a)				
	Outer leaf: color						
	yellow green					EX King santosai, Regina	1
	green					Daetong, Hayamidori, Kaho, Muso	2
	grey green						3
	purple					Jinhongssam, Kwonnongppalgang	4

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10	QN	VG	(a)				
	Outer leaf : Intensity of color						
	very light						1
	very light to light						2
	light					Kaho, Red Dragon	3
	light to medium						4
	medium					Daetong, Muso, Sprinkin	5
	medium to dark						6
	dark					Hayamidori, 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					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, Shin-azuma	4
	very strong							5
15	QN	VG	(+)	(a)				
	Outer leaf: incisions of margin							
	absent or weak						Hanko, Jinhongssam, Kenshin	1
	medium						Kasumi, Lycotfresh Gimjang	2
	strong							3
16	QN	VG	(+)	(a)				
	Outer leaf: serration of margin							
	absent or weak						Hanko, Jinhongssam, Kinap	1
	weak to medium							2
	medium						Daetong, Enduro	3
	medium to strong							4
	strong						Sinrok Utgari	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	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	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							
	concave						Bilko, Jinhongssam, Parkin	1
	concave to flat							2
	flat						Daetong, Hanco, Kinap	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						Lycofresh Gimjang, Muso	1
	green							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: type							
	open						Jinhongssam	1
	open to half-open							2
	half-open						Daetong, Spectrum	3
	half-open to closed							4
	closed						Golden boy, Kinap, Muso	5

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26	PQ	VG	(b)				
	Head: color of top						
	white						1
	yellow green					Kasumi	2
	green					Daetong, Lycofresh Gimjang, Muso	3
	dark green					Bando	4
	purple					Jinhongssam, Red Dragon	5
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

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30	PQ	VG	(+)	(b)				
	Head: shape of apex of internal stem							
	pointed						Kaho	1
	round						Bilko, Muso, Parkin	2
	truncate						Jindaebak, Syunju	3
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

8. Explanations on the Table of Characteristics

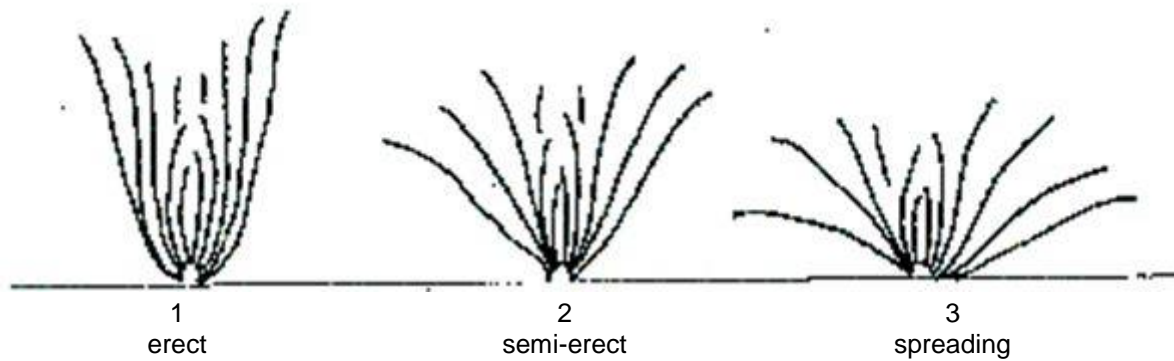
8.1 *Explanations covering several characteristics*

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.

8.2 *Explanations for individual characteristics*

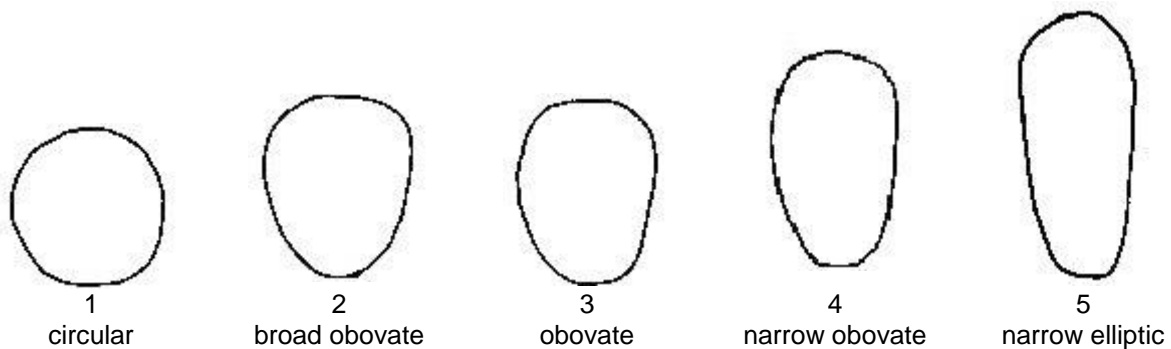
Ad. 1: Plant: habit



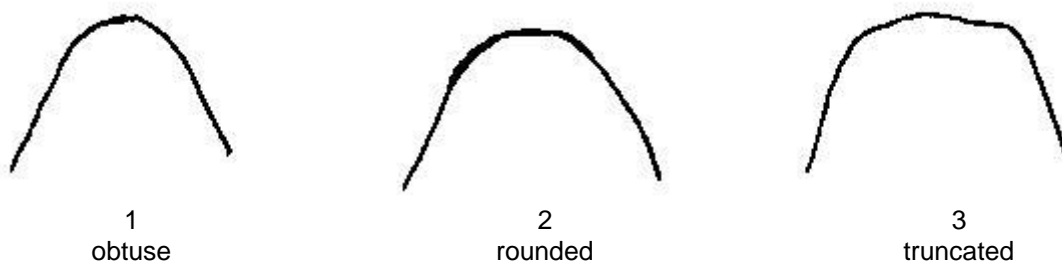
Ad. 4: Outer leaf: width

Observation should be made on the broadest part.

Ad. 5: Outer leaf: shape



Ad. 6: Outer leaf: 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

Observation should be made excluding leaf base.



2
straight



3
convex

Ad. 14: Outer Leaf: undulation of margin



2. weak



3. medium



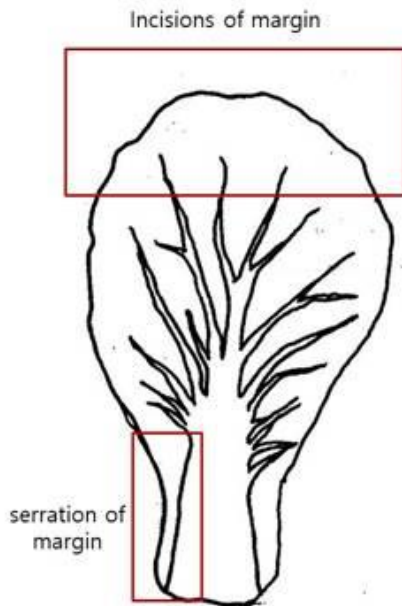
4. strong



5. very strong

Ad. 15: Outer leaf: incisions of margin

Observations should be made on distal part of leaf.



1. absent or weak



2. medium



3. strong

Ad. 16: Outer leaf: serration of margin

Observations should be made on the base part of leaf.



1
absent or weak

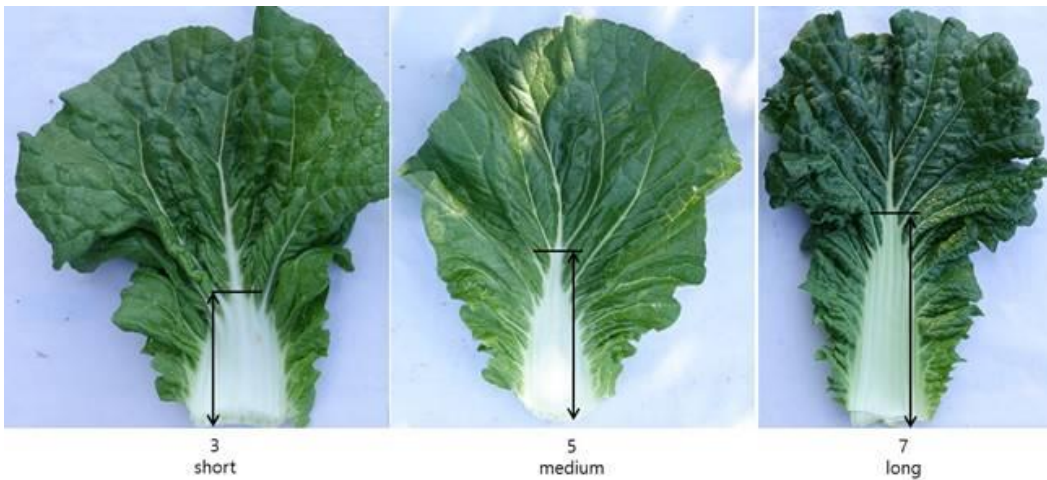
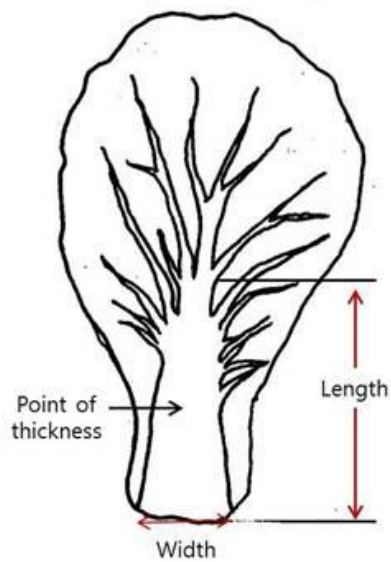


3
medium



5
strong

Ad. 17: Outer leaf: length of midrib

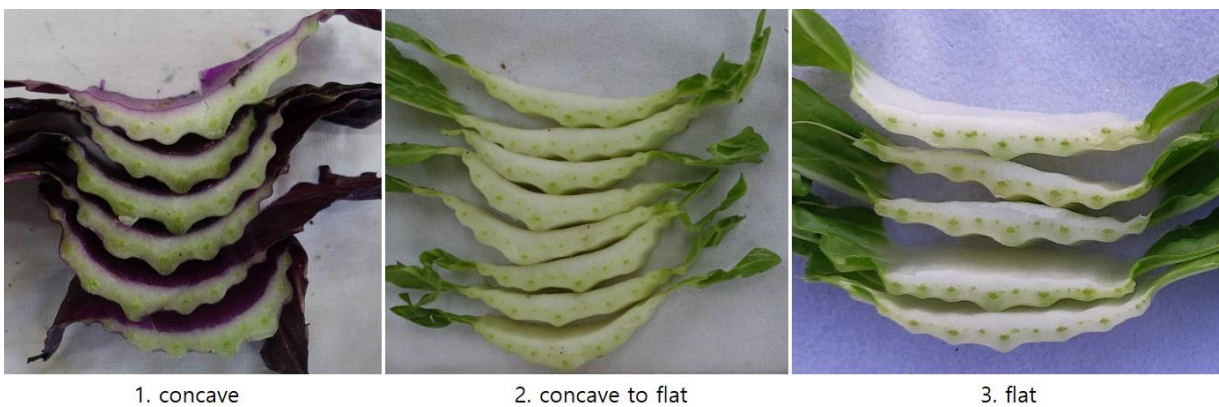


Ad. 18: Outer leaf: width of midrib

See Ad. 17

Ad. 19: Outer leaf: midrib in cross section

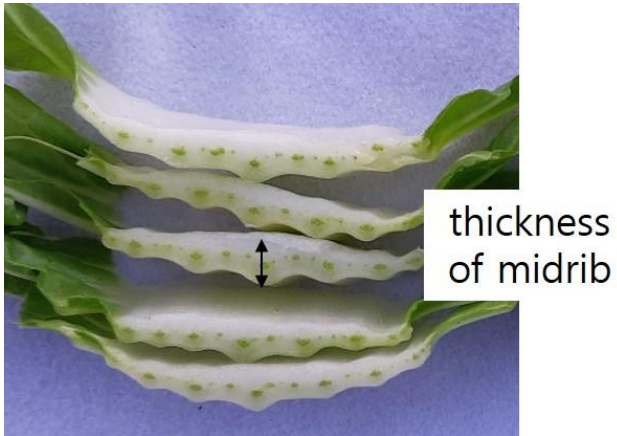
Observation should be made in the middle part of midrib.



Ad. 20: Outer leaf: thickness of midrib

See Ad. 17

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



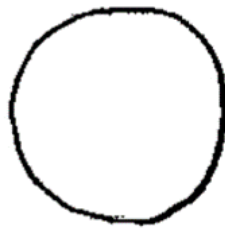
Ad. 21: Outer leaf: color of midrib



Ad. 23: Head: width

Observations should be made on the broadest part.

Ad. 24: Head: shape in longitudinal section



1
circular



2
elliptic



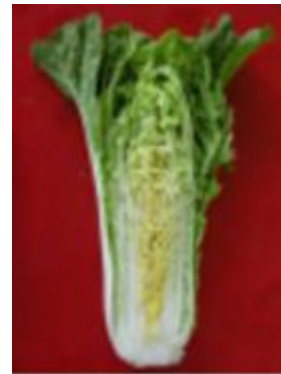
3
ovate



4
obovate



5
oblong



6
narrow oblong

Ad. 25: Head: type



1
open



3
half-open



5
closed

Ad. 27: Head: blistering of wrapper leaf



1
abscent or very weak



2
weak



3
medium



4
strong



5
very strong

Ad. 28: Head: internal color



1
whitish



2
light yellow



3
yellow



4
dark yellow



5
orange



6
purple

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

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)	
--	--	---	--

<p align="center">TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>			
1. Subject of the Technical Questionnaire			
1.1.1	Botanical name	<i>Brassica rapa</i> L. subsp. <i>pekinensis</i> (Lour.) Kitam.	[]
1.1.2	Common name	Chinese Cabbage	
1.2.1	Botanical name	hybrids between <i>Brassica rapa</i> L. Emend. Metzg. ssp. <i>pekinensis</i> (Lour.) Hanelt and <i>Brassica rapa</i> L. Emend. Metzg. ssp. <i>chinensis</i> (L.) Hanelt	[]
1.2.2	Common name		
1.3.1	Botanical name	hybrids between <i>Brassica rapa</i> L. Emend. Metzg. ssp. <i>pekinensis</i> (Lour.) Hanelt and <i>Brassica rapa</i> L. var. <i>rapa</i> (L.) Thell.	[]
1.3.2	Common name		
1.4.1	Botanical name	<i>Brassica ×turicensis</i> O. E. Schulz & Thell.	[]
1.4.2	Common name		

2. Applicant

Name

Address

Telephone No.

Fax No.

E-mail address

Breeder (if different from
applicant)

3. Proposed denomination and breeder's reference

Proposed denomination
(if available)

Breeder's reference

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

#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross []

(please state parent variety)

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

female parent

male parent

(b) partially known cross []

(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)

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

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:
-------------------------	-----------------	-------------------

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	3 []
short to medium		4 []
medium	Bilko, Daetong, Muso	5 []
medium to tall		6 []
tall	Monument, Shousai	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: type (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:
-------------------------	-----------------	-------------------

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 : type</i>	<i>half-open</i>	<i>closed</i>
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

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:
-------------------------	-----------------	-------------------

8. Authorization for release

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

Yes [] No []

- (b) Has such authorization been obtained?

Yes [] No []

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

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

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

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

- | | | | |
|-----|---|---------|--------|
| (a) | Microorganisms (e.g. virus, bacteria, phytoplasma) | Yes [] | No [] |
| (b) | Chemical treatment (e.g. growth retardant, pesticide) | Yes [] | No [] |
| (c) | Tissue culture | Yes [] | No [] |
| (d) | Other factors | Yes [] | No [] |

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

.....

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

[End of document]