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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 xturicensis 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-fifth session, to be held in Antalya, Turkey,
from 2021-05-03 to 2021-05-07*

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 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 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 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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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.....	8
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL.....	9
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS.....	9
6.1 Categories of Characteristics.....	9
6.2 States of Expression and Corresponding Notes.....	9
6.3 Types of Expression.....	9
6.4 Example Varieties.....	9
6.5 Legend.....	11
7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES.....	12
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS.....	21
8.1 Explanations covering several characteristics.....	21
8.2 Explanations for individual characteristics.....	22
9. LITERATURE.....	28
10 TECHNICAL QUESTIONNAIRE.....	29

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.

- 1.2 Guidance on the use of Test Guidelines for (e.g. [species in the same genus] / [interspecific hybrids] / [intergeneric hybrids]) that are not explicitly covered by Test Guidelines is provided in document TGP/13 "Guidance for New Types and Species."

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.

To assess distinctness of hybrids, the parent lines and the formula may be used according to the following recommendations:

- (i) description of parent lines according to the Test Guidelines;
- (ii) check of the originality of the parent lines in comparison with the variety collection, based on the characteristics in Chapter 7, in order to identify similar parent lines;
- (iii) check of the originality of the hybrid formula in relation to the hybrids in the variety collection, taking into account the most similar lines; and
- (iv) assessment of the distinctness at the hybrid level for varieties with a similar formula.

Further guidance is provided in documents TGP/9 "Examining Distinctness" and TGP/8 "Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability".

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.1.4 Number of Plants or Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 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 cross-pollinated 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 The assessment of uniformity for hybrid varieties depends on the type of hybrid and should be according to the recommendations for hybrid varieties in the General Introduction.

4.2.5 Where the assessment of a hybrid variety involves the parent lines, the uniformity of the hybrid variety should, in addition to an examination of the hybrid variety itself, also be assessed by examination of the uniformity of its parent lines.

4.2.6 For the assessment of uniformity of seed-propagated 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) Head: shape in longitudinal section (characteristic 24)
 - (b) Head: type (characteristic 25)
 - (c) Head: internal color (characteristic 30)
 - (d) Time of harvest maturity (characteristic 34)
- 5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 "Examining Distinctness".

6. Introduction to the Table of Characteristics

6.1 *Categories of Characteristics*

6.1.1 Standard Test Guidelines Characteristics

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

6.1.2 Asterisked Characteristics

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

6.2 *States of Expression and Corresponding Notes*

- 6.2.1 States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.
- 6.2.2 All relevant states of expression are presented in the characteristic.
- 6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 "Development of Test Guidelines".

6.3 *Types of Expression*

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

6.4 *Example Varieties*

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

6.5 *Legend*

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

- 1 Characteristic number
- 2 (*) Asterisked characteristic – see Chapter 6.1.2
- 3 Type of expression
 - QL Qualitative characteristic – see Chapter 6.3
 - QN Quantitative characteristic – see Chapter 6.3
 - PQ Pseudo-qualitative characteristic – see Chapter 6.3
- 4 Method of observation (and type of plot, if applicable)
 - MG, MS, VG, VS – see Chapter 4.1.5
- 5 (+) See Explanations on the Table of Characteristics in Chapter 8.2
- 6 (a)-(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		(b)				
	Plant: height							
	short						Natsuki	3
	medium						Bilko, Daetong, Muso	5
	tall						Monument, Shousai	7
3.	QN	MS/VG		(b)				
	Outer leaf: length							
	short						Salad, TheHan1ho	3
	medium						Daetong, Muso	5
	long						Shousai	7
4.	QN	MS/VG		(b)				
	Outer leaf: maximum width							
	narrow						Jinhongssam, Salad	3
	medium						Daetong, Muso	5
	broad						Bando, Lycofresh Gimjang	7
5. (*)	PQ	VG	(+)	(b)				
	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	(+)	(b)				
	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	(b)				
	Outer leaf: number of blisters on upper side						
	few					Granaat, Kinap, Sprinter	3
	medium					Daetong, Muso, Parkin	5
	many					Bando, Enduro, Jindaebak, Ming	7
8.	QN	VG	(+)	(b)			
	Outer leaf: size of blisters on upper side						
	small					Granaat	3
	medium					Daetong, Parkin	5
	large					Enduro	7
9. (*)	PQ	VG	(b)				
	Outer leaf: color						
	yellow green					Regina	1
	green					Daetong, Hayamidori, Kaho, Muso	2
	grey green						3
	purple					Jinhongssam, Kwonnongppalgang	4
10	QN	VG	(b)				
	Intensity of color						
	light					Kaho, Red Dragon	3
	medium					Daetong, Muso, Sprinkin	5
	dark					Hayamidori, Parkin, TheHan1ho	7
11	QN	VG	(b)				
	Outer leaf: glossiness						
	weak					Hanko, Kaho, Kinap	3
	medium					Daetong, Muso	5
	strong					Shunjyu	7

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12	QN	VG					
	Outer leaf: hairiness (at lower side)	Feuille externe : pilosité (sur la face inférieure)	Umblatt: Behaarung (an der Unterseite)	Hoja externa: pubescencia (en el envés)			
	absent or very weak				Salad	1	
	weak				Cream, Kinap	3	
	medium				Daetong, Shunjyu, Tardisto	5	
	strong				Jinhongssam, Muso	7	
	very strong					9	
13	QN	VG	(b)				
	Outer leaf: profile in longitudinal section (excluding leaf base)	Feuille externe : profil en section longitudinale (sans la base de la feuille)	Umblatt: Profil im Längsschnitt (ohne Blattbasis)	Hoja externa: perfil en sección longitudinal (excluida la base de la hoja)			
	concave				Bilko, Parkin	1	
	straight				Daetong, Monument	2	
	convex				Hanko	3	
14	QN	VG	(+)	(b)			
	Outer Leaf: undulation of margin	Feuille externe : ondulation du bord	Umblatt: Randwellung	Hoja externa: ondulación del margen			
	absent or weak					1	
	weak				Jinhongssam, Kaho, Red Dragon	2	
	medium				Hanko, Suho	3	
	strong				Monument, Shin-azuma	4	
	very strong					5	
15	QN	VG	(+)	(b)			
	Outer leaf: incisions of margin (at distal part)	Feuille externe : découpeure du bord (à la partie distale)	Umblatt: Randeinschnitte (am distalen Teil)	Hoja externa: incisiones del margen (en la parte distal)			
	absent or weak				Hanko, Jinhongssam, Kenshin	1	
	intermediate				Kasumi, Lycofresh Gimjang	2	
	strong				Muso	3	

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16	QN	VG	(+)	(b)				
	Outer leaf: serration of margin (at base)	Feuille externe : échancre du bord (à la base)	Umblatt: Randsägung (an der Basis)	Hoja externa: serrado del margen (en la base)				
	weak					Hanko, Jinhongssam, Kinap	3	
	medium					Daetong, Enduro	5	
	strong					Sinrok Utgari	7	
17	PQ	VG	(b)					
	Outer leaf: midrib in cross section (at mid-point)							
	concave					Bilko, Jinhongssam, Parkin	1	
	flat					Daetong, Hanko, Kinap	2	
18	QN	MS/VG	(+)	(b)				
	Outer leaf: length of midrib							
	short					Hamamidori	3	
	medium					Daetong, Muso	5	
	long					RCC65, Shousai	7	
19	QN	MS/VG	(+)	(b)				
	Outer leaf: width of midrib (at base)							
	narrow					Shousai	3	
	medium					Enduro, Jinhongssam, Red Dragon	5	
	broad					Gorki, Harumaki 1 go, Jindaebak	7	
20	QN	MS/VG	(+)	(b)				
	Outer leaf: thickness of midrib (at middle part)							
	thin					RCC65	3	
	medium					Daetong	5	
	thick					Jinhongssam	7	

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21	PQ	VG	(+)	(b)				
	Outer leaf: color of midrib (at inner side)							
	white						Lycofresh Gimjang, Muso	1
	green							2
	purple						RCC65, Red Dragon	3
22	QN	MS/VG		(c)				
	Head: height							
	short						Golden boy	3
	medium						Muso, Parkin, Sprinkin, Suho	5
	tall						Jinhongssam, Monument, Shousai	7
23	QN	MS/VG		(c)				
	Head: maximum width							
	narrow						Granaat, Jinhongssam	3
	medium						Muso, TheHan1ho	5
	broad						Jindaebak	7
24 (*)	PQ	VG	(+)	(c)				
	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	(+)	(c)				
	Head: type							
	open						Jinhongssam, Monument	1
	half-open						Daetong, Spectrum	3
	closed						Golden boy, Kinap, Muso	5

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26	PQ	VG	(c)				
	Head: color of top						
	white						1
	yellow green					Kasumi	2
	green					Daetong, Lycofresh Gimjang, Muso	3
	dark green					Bando, Bilko	4
	purple					Jinhongssam, Red Dragon	5
27	QN	VG	(+)	(c)			
	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	QN	VG	(+)	(c)			
	Head: blistering at the top of the inner leaves						
	weak						3
	medium						5
	strong						7
29 (*)	QN	VG	(c)				
	Open head variety exclude: Head: degree of overlapping leaf						
	low					RCC65, Shousai	3
	medium					Shinju, TheHan1ho	5
	high					Golden boy, Kaho	7
30 (*)	PQ	VG	(+)	(c)			
	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

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
31	QN	VG	(c)				
	Head: firmness						
		very loose				Jinhongssam	1
		loose				Granaat, RCC65	3
		medium				Gorki, Lycofresh Gimjang	5
		firm				Bando, Bazuko, Suho	7
		very firm				Shunju	9
32	PQ	VG	(+)	(c)			
	Head: apex of internal stem						
		pointed				Kaho	1
		round				Bilko, Muso, Parkin	2
		truncate				Jindaebak, Syunju	3
33	QL	VG	(+)	(c)			
	Head: coloration in vascular bundle of internal stem						
		absent				Daetong	1
		present				Betafresh	9
34 (*)	QN	MG/MS/VG	(c)				
	Time of harvest maturity						
		very early				Kenshin	1
		early				Blues, RCC65, Sprinkin	3
		medium				Enduro, Muso, Suho	5
		late				Chusyu, Jindaebak, Parkin, Red Dragon	7
		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) Observations should be made at the beginning of head formation, before harvest maturity.
- (b) Observations should be made before harvest.
- (c) Observations should be made at the harvest maturity.

8.2 *Explanations for individual characteristics*

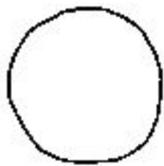
Ad. 1: Plant: habit

1
erect

2
semi-erect

3
spreading

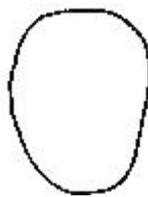
Ad. 5: Outer leaf: shape



1
circular



2
broad obovate



3
obovate



4
narrow obovate



5
narrow elliptic

Ad. 6: Outer leaf: apex

1
obtuse

2
rounded

3
truncated

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



3
small



5
medium



7
large

Ad. 14: Outer Leaf: undulation of margin



2
weak



3
medium



5
strong

Ad. 15: Outer leaf: incisions of margin (at distal part)



1
absent or weak



2
intermediate



3
strong

Ad. 16: Outer leaf: serration of margin (at base)

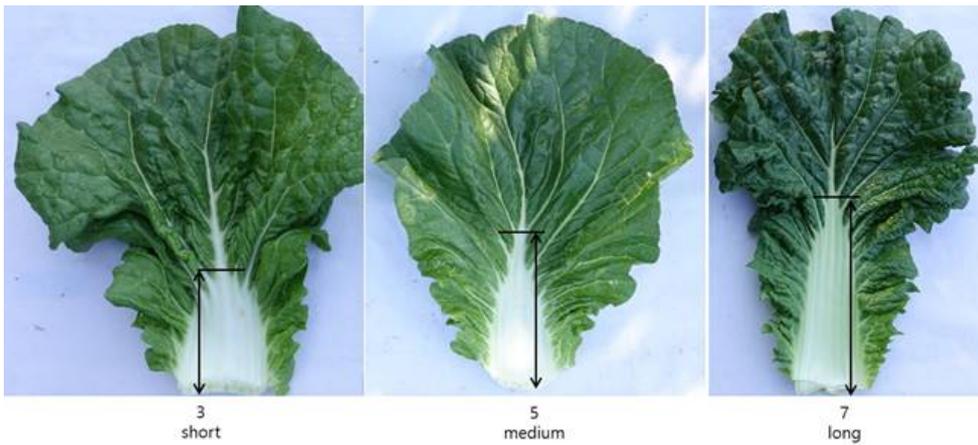
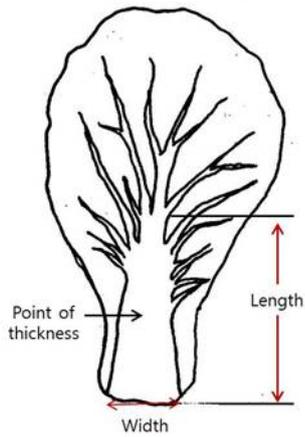
See Ad. 15

3
weak

5
medium

7
strong

Ad. 18: Outer leaf: length of midrib



Ad. 19: Outer leaf: width of midrib (at base)

See Ad.18

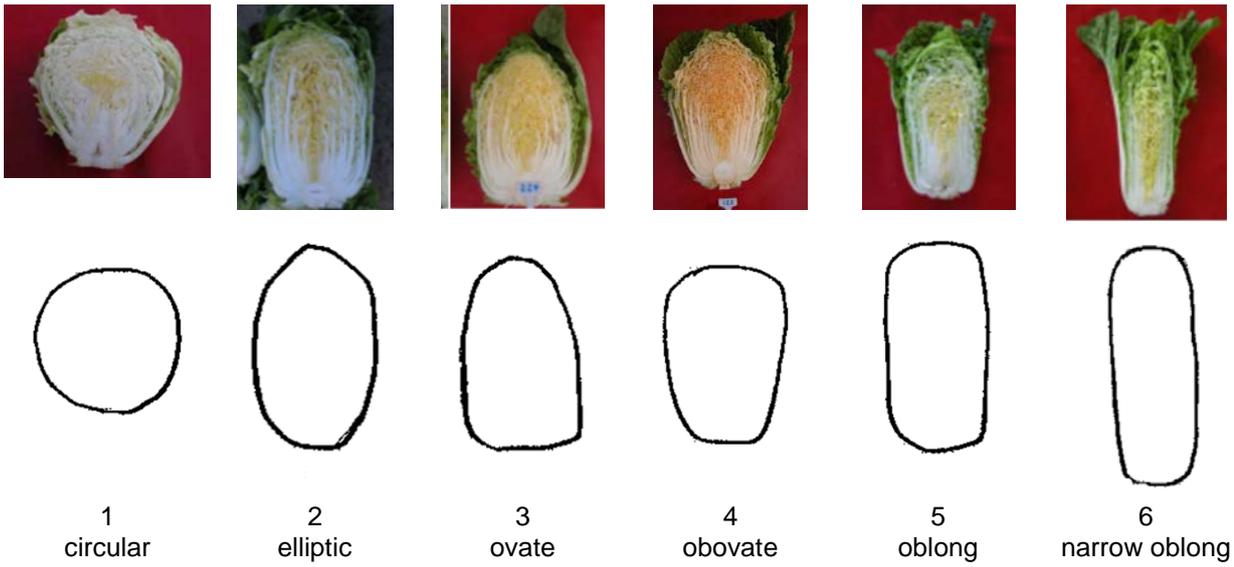
Ad. 20: Outer leaf: thickness of midrib (at middle part)

See Ad.18

Ad. 21: Outer leaf: color of midrib (at inner side)



Ad. 24: Head: shape in longitudinal section



Ad. 25: Head: type

1
open

3
half-open

5
closed

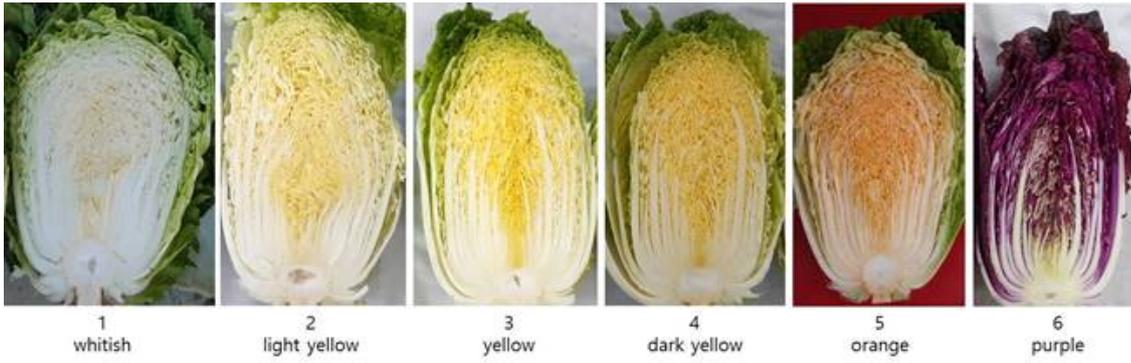
Ad. 27: Head: blistering of wrapper leaf



Ad. 28: Head: blistering at the top of the inner leaves



Ad. 30: Head: internal color



Ad. 32: Head: apex of internal stem



Ad. 33: Head: coloration in vascular bundle of internal stem



1
absent



9
present

9. Literature

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Application date: (not to be filled in by the applicant)
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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	<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 x 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:
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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 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 []
5.2 Head: type (25)		
open	Jinhongssam, Monument	1 []
half-open	Daetong, Spectrum	3 []
closed	Golden boy, Kinap, Muso	5 []
5.3 Time of harvest maturity (34)		
very early	Kenshin	1 []
early	Blues, RCC65, Sprinkin	3 []
medium	Enduro, Muso, Suho	5 []
late	Chusyu, Jindaebak, Parkin, Red Dragon	7 []
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>			
<p>Comments:</p>			

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.]

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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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]