CHINESE CABBAGE

*(Brassica rapa L. var. pekinensis (Lour.) Kitam.)*

**GUIDELINES**

**FOR THE CONDUCT OF TESTS**

**FOR DISTINCTNESS, UNIFORMITY AND STABILITY**

Alternative Names: *

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<td>Chinese Cabbage</td>
<td>Chou chinois</td>
<td>Chinakohl</td>
<td>Repollo chino</td>
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<td>Brassica pekinensis (Lour.) Rupr.</td>
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<td>Brassica rapa L. ssp. pekinensis (Lour.) Olsson</td>
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<td>Brassica campestris L. ssp. pekinensis (Lour.) Olsson</td>
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**ASSOCIATED DOCUMENTS**

These guidelines should be read in conjunction with document TG/1/3, “General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants” (hereinafter referred to as the “General Introduction”) and its associated “TGP” documents.

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]
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1. **Subject of these Test Guidelines**

These Test Guidelines apply to all varieties of *Brassica rapa* L. var. *pekinesis* (Lour.) Kitam. (= *Brassica pekinensis* (Lour.) Rupr., *Brassica rapa* L. ssp. *pekinesis* (Lour.) Olsson, or *Brassica campestris* L. ssp. *pekinesis* (Lour) Olsson) and varieties of hybrids between that species and *Brassica rapa* L. where the latter varieties are similar to those of *Brassica rapa* L. var. *pekinesis* (Lour.) Kitam.

2. **Material Required**

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of seed.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

   20 g or 5,000 seeds.

2.4 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.

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

2.6 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 **Duration of Tests**

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

3.2 **Testing Place**

The tests should normally be conducted at one place. If any characteristics of the variety, which are relevant for the examination of DUS, cannot be seen at that place, the variety may be tested at an additional place.
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 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.

3.4.2 Each test should be designed to result in a total of at least 60 plants which should be divided between two or more replicates.

3.5 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, all observations determined by measuring or counting should be made on 20 plants or parts taken from each of 20 plants.

3.6 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 minimum duration of tests recommended in section 3.1 reflects, in general, the need to ensure that any differences in a characteristic are sufficiently consistent.

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.
4.2 **Uniformity**

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 The assessment of uniformity for single cross hybrid varieties should be made on the basis of the number of off-types. 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.

4.2.3 For the assessment of uniformity of other seed-propagated varieties, the recommendations in the General Introduction for cross-pollinated varieties should be followed, as appropriate.

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 tested, either by growing a further generation, or by testing a new seed or plant stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

4.3.3 The stability of a hybrid variety may, in addition to an examination of the hybrid variety itself, also be assessed by examination of the uniformity and stability of its parent lines.

5. **Grouping of Varieties and Organization of the Growing Trial**

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness is 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) Time of harvest maturity (characteristic 33).

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.
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**

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.

6.3 **Types of Expression**

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

6.4 **Example Varieties**

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

6.5 **Legend**

(*) Asterisked characteristic – see Section 6.1.2

(a)-(b) See Explanations on the Table of Characteristics in Chapter 8, Section 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8, Section 8.2
## Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres

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<th>deutsch</th>
<th>Español</th>
<th>Example Varieties</th>
<th>Note/Nota</th>
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<td>Plante: port (au début de la formation de la pomme)</td>
<td>Pflanze: Wuchsform (zu Begin der Kopfbildung)</td>
<td>Planta: porte (al comienzo de la formación del cogollo)</td>
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<td>2. (a) Plant: height</td>
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<td>Pflanze: Höhe</td>
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<td>alta</td>
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<td>Hoja externa: anchura máxima</td>
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<td>Umblatt (vor der Erntereife)</td>
<td>Hoja externa: forma (antes de la madurez para la cosecha)</td>
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<th>Hoja externa: ápice</th>
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<th>Umblatt: Anzahl von Blasen auf der Oberseite</th>
<th>Hoja externa: número de vesículas del haz</th>
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<th>Umblatt: Größe der Blasen auf der Oberseite</th>
<th>Hoja externa: tamaño de las vesículas del haz</th>
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<td>Sólo variedades de hojas externas verdes: Hoja externa: intensidad del color verde</td>
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<td>Umblatt: Anthocyanfärbung</td>
<td>Hoja externa: pigmentación antociánica</td>
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<td>12. (<strong>b</strong>) Outer leaf: glossiness</td>
<td>Feuille externe: brillance</td>
<td>Umblatt: Glanz</td>
<td>Hoja externa: brillo</td>
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<td>stark</td>
<td>fuerte</td>
<td>Shunjyu</td>
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<td>13. (<strong>b</strong>) Outer leaf: hairiness (at lower side)</td>
<td>Feuille externe: pilosité (sur la face inférieure)</td>
<td>Umblatt: Behaarung (an der Unterseite)</td>
<td>Hoja externa: pubescencia (en el envés)</td>
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<tr>
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<td>nulle ou très faible</td>
<td>fehlend oder sehr gering</td>
<td>ausente o muy débil</td>
<td>Salad</td>
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<td>14. (b) Outer leaf: profile in longitudinal section (excluding leaf base)</td>
<td>Feuille externe: profil en section longitudinale (sans la base de la feuille)</td>
<td>Umblatt: Profil im Längsschnitt (ohne Blattbasis)</td>
<td>Hoja externa: perfil en sección longitudinal (excluida la base de la hoja)</td>
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<td>15. (b) Outer Leaf: undulation of margin</td>
<td>Feuille externe: ondulation du bord</td>
<td>Umblatt: Randwellung</td>
<td>Hoja externa: ondulación del margen</td>
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<td>16. (b) Outer leaf: incisions of margin (at distal part)</td>
<td>Feuille externe: découpage du bord (à la partie distale)</td>
<td>Umblatt: Randeinschnitte (am distalen Teil)</td>
<td>Hoja externa: incisiones del margen (en la parte distal)</td>
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<td>17. (b) Outer leaf: serration of margin (at base)</td>
<td>Feuille externe: échancrure du bord (à la base)</td>
<td>Umblatt: Randsägung (an der Basis)</td>
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<td>18. (b) Outer leaf: midrib in cross section (at mid-point)</td>
<td>Feuille externe: section transversale de la nervure (au milieu)</td>
<td>Umblatt: Mittelrippe im Querschnitt (in der Mitte)</td>
<td>Hoja externa: nervio central en sección transversal (en el punto medio)</td>
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<td><strong>19. (b)</strong> Outer leaf: length of midrib</td>
<td>Feuille externe: longueur de la nervure</td>
<td>Umblatt: Länge der Mittelrippe</td>
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<td><strong>20. (b)</strong> Outer leaf: width of midrib (at base)</td>
<td>Feuille externe: largeur de la nervure (à la base)</td>
<td>Umblatt: Breite der Mittelrippe (an der Basis)</td>
<td>Hoja externa: anchura del nervio central (en la base)</td>
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<td>Pomme: largeur maximale</td>
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<td>24. (a)</td>
<td>Head: shape in longitudinal section</td>
<td>Pomme: forme en section longitudinale</td>
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<td>27. (a)</td>
<td>Head: color of top Pomme: couleur du sommet</td>
<td>Kopf: Farbe des oberen Teils</td>
<td>Cogollo: color de la parte superior</td>
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<td>29. (a) Head: blistering of wrapper leaf</td>
<td>Pomme: cloqûre des feuilles de couverture</td>
<td>Kopf: Blasigkeit des Deckblattes</td>
<td>Cogollo: abullonado de la hoja envolvente</td>
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<td>ausente o muy débil</td>
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<td>30. (a) Head: internal color</td>
<td>Pomme: couleur interne</td>
<td>Kopf: Innenfarbe</td>
<td>Cogollo: color de la parte interna</td>
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<td>31. (a) Head: firmness (at harvest maturity)</td>
<td>Pomme: fermeté (à maturité de récolte)</td>
<td>Kopf: Festigkeit (bei Erntereife)</td>
<td>Cogollo: firmeza (en el momento de la madurez para la cosecha)</td>
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<td>sehr fest</td>
<td>muy firme</td>
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<td><strong>32. (a) Head: apex of internal stem (at harvest maturity)</strong></td>
<td>Pomme: apex de la tige interne (à maturité de récolte)</td>
<td>Kopf: Spitze des Innenstrunks (bei Erntereife)</td>
<td>Cogollo: ápice del tallo interno (en el momento de la madurez para la cosecha)</td>
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<td>Époque de maturité de récolte</td>
<td>Zeitpunkt der Erntereife</td>
<td>Época de madurez para la cosecha</td>
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<td>temprana</td>
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<td>media</td>
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<td>spät</td>
<td>tardía</td>
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<td>sehr spät</td>
<td>muy tardía</td>
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8. **Explanations on the Table of Characteristics**

8.1 **Explanations covering several characteristics**

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

(a) **Plant, leaf and head**: Observations on the plant, leaf and head should be made at harvest maturity.

(b) **Outer leaf**: Observations on the outer leaf should be made on its upper outer side.

8.2 **Explanations for individual characteristics**

Ad. 1: **Plant: habit (at the beginning of head formation)**

1. erect
2. semi-erect
3. spreading
Ad. 5: Outer leaf: shape (before harvest maturity)

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 19: Outer leaf: length of midrib

Ad. 24: Head: shape in longitudinal section

1 circular
2 elliptic
3 ovate
4 obovate
5 oblong
6 narrow oblong
9. Literature


10. Technical Questionnaire

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<tr>
<th>TECHNICAL QUESTIONNAIRE</th>
<th>Page {x} of {y}</th>
<th>Reference Number:</th>
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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 Latin Name  
**Brassica rapa** L. var. **pekinesis** (Lour.) Kitam.

1.2 Common Name  
CHINESE CABBAGE

2. Applicant

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<td>E-mail address</td>
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<td>Breeder (if different from applicant)</td>
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3. Proposed denomination and breeder’s reference

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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 varieties)
(b) partially unknown cross [ ]
   (please state known parent variety(ies))
(c) totally unknown cross [ ]

4.1.2 Mutation [ ]
   (please state parent variety)

4.1.3 Discovery [ ]
   (please state where, when and how developed)

4.1.4 Other [ ]
   (please provide details)

4.2 Method of Propagating the Variety

(a) Cross-pollination
   (i) population [ ]
   (ii) synthetic variety [ ]
(b) Hybrid [ ]
   (see below)
(c) 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.
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).

<table>
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<tr>
<th>Characteristics</th>
<th>Example Varieties</th>
<th>Note</th>
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</tr>
<tr>
<td>tall</td>
<td>Shousai</td>
<td>7[ ]</td>
</tr>
<tr>
<td><strong>5.2 Head: shape in longitudinal section</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(24) circular</td>
<td>Kenshin</td>
<td>1[ ]</td>
</tr>
<tr>
<td>elliptic</td>
<td>Hayamidori</td>
<td>2[ ]</td>
</tr>
<tr>
<td>ovate</td>
<td>Shinjyu</td>
<td>3[ ]</td>
</tr>
<tr>
<td>obovate</td>
<td>Hamamidori</td>
<td>4[ ]</td>
</tr>
<tr>
<td>oblong</td>
<td>Chushu</td>
<td>5[ ]</td>
</tr>
<tr>
<td>narrow oblong</td>
<td>Shousai</td>
<td>6[ ]</td>
</tr>
<tr>
<td><strong>5.3 Head: type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(25) open</td>
<td>Monument</td>
<td>1[ ]</td>
</tr>
<tr>
<td>half-open</td>
<td>Spectrum</td>
<td>2[ ]</td>
</tr>
<tr>
<td>closed</td>
<td>Kinap, Muso</td>
<td>3[ ]</td>
</tr>
<tr>
<td><strong>5.4 Time of harvest maturity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(33) very early</td>
<td>Kenshin</td>
<td>1[ ]</td>
</tr>
<tr>
<td>early</td>
<td>Regina, Sprinter</td>
<td>3[ ]</td>
</tr>
<tr>
<td>medium</td>
<td>Muso, Nestor</td>
<td>5[ ]</td>
</tr>
<tr>
<td>late</td>
<td>Chusyu, Granado</td>
<td>7[ ]</td>
</tr>
<tr>
<td>very late</td>
<td>Treasure Island</td>
<td>9[ ]</td>
</tr>
</tbody>
</table>
6. Similar varieties and differences from these varieties

<table>
<thead>
<tr>
<th>Denomination(s) of variety(ies) similar to your candidate variety</th>
<th>Characteristic(s) in which your candidate variety differs from the similar variety(ies)</th>
<th>Describe the expression of the characteristic(s) for the similar variety(ies)</th>
<th>Describe the expression of the characteristic(s) for your candidate variety</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>(Example)</em></td>
<td><em>Head: shape in longitudinal section</em></td>
<td><em>circular</em></td>
<td><em>elliptic</em></td>
</tr>
</tbody>
</table>


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 Special conditions for the examination of the variety

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

Yes [ ]  No [ ]

7.2.2 If yes, please give details:

7.3 Other information

8. Authorization for release

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

Yes [ ]  No [ ]

(b) Has such authorization been obtained?

Yes [ ]  No [ ]

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

9. 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]