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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

LOTUS

UPOV Code(s): NELUM

Nelumbo Adans.

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GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from China

to be considered by the

Technical Working Party for Ornamental Plants and Forest Trees at its fifty-seventh session,
to be held in Roelofarendsveen, Kingdom of the Netherlands,
from 2025-03-31 to 2025-04-03

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Nelumbo Adans.	Lotus	Lotus	Lotus	Loto

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

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

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Nelumbo* Adans..

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 rhizome propagules or seeds.

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

A sufficient amount of seeds or rhizome propagules to produce at least 10 plants

In the case of seed, 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.

In the case of rhizome propagule, a standard propagule (meeting market requirement) should be fresh and healthy, and each should have two internodes with healthy shoots.

A standard propagule with two expanded internodes

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 a single growing cycle.

3.1.2 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

3.3.1 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.

3.3.2 The optimum stage of development for the assessment of each characteristic is indicated by a number in the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.

3.3.3 Because daylight varies, color determinations made against a color chart should be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room without direct sunlight. The spectral distribution of the illuminant for artificial daylight should conform with the CIE Standard of Preferred Daylight D 6500 and should fall within the tolerances set out in the British Standard 950, Part I. These determinations should be made with the plant part placed against a white background. The color chart and version used should be specified in the variety description.

3.4 Test Design

3.4.1 In the case of rhizome propagated varieties, each test should be designed to result in a total of at least 10 plants.

3.4.2 In the case of seed propagated varieties, each test should be designed to result in a total of at least 10 plants.

3.4.3 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

In the case of vegetatively propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 9 plants or parts taken from each of 9 plants and any other observation made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 1.

In the case of seed-propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 9 plants or parts taken from each of 9 plants and any other observation made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 1.

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 vegetatively propagated 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 for cross-pollinated 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 For the assessment of uniformity of vegetatively 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 10 plants, 1 off-type is 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 or plant 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 of foliage (characteristic 1)
(b) Leaf blade: variegation (characteristic 5)
(c) Flower: position relative to leaf (characteristic 20)
(d) Flower: type (characteristic 21)
(e) Flower: shape (characteristic 23)
(f) Flower: color (characteristic 24)
(g) Carpel: status of development (characteristic 41)
(h) Expanded rhizome: thickness (characteristic 60)
(i) Main expanded rhizome: shape of internode (characteristic 62)

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)-(x) See Explanations on the Table of Characteristics in Chapter 8.1

7 Growth stage key (if applicable) See Explanations on the Table of Characteristics in Chapter 8.3

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

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	**(*)**	**QN**	**MS/VG**	**(+)**		**30**			
		Plant: height of foliage							
		very short						Chuzi Luo	1
		very short to short							2
		short						Xing Huo	3
		short to medium							4
		medium						Yijian Lian	5
		medium to tall							6
		tall						Yellow Bird	7
		tall to very tall							8
		very tall						Fen Bawang	9
2.	**(*)**	**QN**	**MG/MS/VG**	**(+)**		**30**			
		Plant: height at flowering							
		very short						Chuzi Luo	1
		very short to short							2
		short						Yanzhi Wan	3
		short to medium							4
		medium						Bo Ai	5
		medium to tall							6
		tall						Zhizun Qianban	7
		tall to very tall							8
		very tall						Fen Bawang	9
3.		**QN**	**MG/MS/VG**		**(a)**	**30**			
		Leaf: number							
		absent						Ai Xiangsi Hong	1
		few						Zhongshan Hongtai	2
		medium						Honghu Hong	3
		many						Qian Ban	4
		very many						Hong Sijuan	5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4.	**(*)**	**QN**	**MS/VG**	**(+)**	**(a)**	**30**			
		Leaf blade: size							
		very small						Chuzi Luo	1
		very small to small							2
		small						Yanzhi Wan	3
		small to medium							4
		medium						Jiuhua Haoyue	5
		medium to large							6
		large						Qian Ban	7
		large to very large							8
		very large						Fen Bawang	9
5.	**(*)**	**QL**	**VG**	**(+)**	**(a)**	**20-30**			
		Leaf blade: variegation							
		absent						Cai Xia	1
		present						Nelumbo 'Furong Sajin'	9
6.	**(*)**	**PQ**	**VG**	**(+)**	**(a)**	**20-30**			
		Leaf blade: main color							
		light or medium green							1
		dark green						Yellow Bird	2
		yellow green						Baiyangdian Bai	3
7.	**(*)**	**PQ**	**VG**	**(+)**	**(a)**	**20-30**			
		Leaf blade: shape							
		rounded or nearly rounded						Yellow Bird	1
		elliptic							2
		narrow elliptic							3
8.		**PQ**	**VG**	**(+)**	**(a)**	**20-30**			
		Leaf blade: shape in longitudinal section							
		strongly concave							1
		moderately concave						Dan Sajin	2
		weakly concave							3
		flat						Jia Jingying	4
		concave center with dropping edge						Elian 1	5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9.	**(*)**	**QN**	**VG**	**(+)**	**(a)**	**20-30**			
		Leaf blade: texture of upper surface							
		very smooth						Yellow Bird	1
		smooth						Fenhong Lingxiao	2
		medium							3
		rough						Honghu Hong	4
		very rough						Daye Chi	5
10.		**QN**	**VG**	**(+)**	**(a)**	**20-30**			
		Leaf blade: depth of concavity							
		absent or very shallow						Yellow Bird	1
		shallow						Honghe Zhanchi	2
		medium						Danban Jinxia	3
		deep							4
11.		**QL**	**VG**	**(+)**	**(a)**	**20-30**			
		Leaf blade: red line of margin							
		absent							1
		present							9
12.		**QN**	**MG/VG**	**(+)**	**(a)**	**20-40**			
		Leaf blade: gap of nose							
		absent or very narrow						Jia Jingying	1
		narrow						Honghu Hong	2
		medium						Yijian Lian	3
		broad						Yellow Bird	4
13.		**QN**	**MG/MS**	**(+)**	**(a)**	**30**			
		Petiole: thickness							
		very thin						Chuzi Luo	1
		thin						Hong Sijuan	2
		medium							3
		thick						Honghu Hong	4
		very thick						Fen Bawang	5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14.		**QN**	**VG**	**(+)**	**(a)**	**20-40**			
		Petiole: density of spines							
		absent or very sparse						Yellow Bird	1
		sparse						Bian Lian	2
		medium						Honghu Hong	3
		dense						Jia Jingying	4
15.	**(*)**	**PQ**	**VG**	**(+)**		**20-30**			
		Flower bud: shape							
		ovoid						Fenhong Lingxiao, Nelumbo 'Xiao Hong Dan'	1
		ovoid-conic						Da Sajin	2
		conic						Honghu Hong	3
		narrow conic						Tan Kong	4
		globose						Piaocheng Fanying	5
		ellipsoid						Jin Fuwa	6
16.	**(*)**	**PQ**	**VG**			**20-30**			
		Flower bud: color							
		green						Baiyangdian Bai	1
		green with purple-red edge						Furong Qipa	2
		green yellow							3
		green red						Jiangnan Mingzhu	4
		purple red						Zhongshan Hongtai	5
		grey purple						Yinxiang Xihu	6
17.		**QN**	**MG**	**(+)**		**30**			
		Flowering: time of starting to bloom							
		early						Jiuhua Haoyue	1
		medium						Honghu Hong	2
		late						Fenhong Lingxiao	3

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
18.		**QN**	**MG**	**(+)**		**30**			
		Flowering time							
		very short							1
		short							2
		medium						Yijian Lian	3
		long						Bian Lian	4
		very long						Fenhong Lingxiao	5
19.	**(*)**	**QN**	**MS/VG**			**30**			
		Flower: number							
		absent or very few						Elian 1	1
		few						Bo Ai	2
		medium						Zhongshan Hongtai	3
		many						Hong Sijuan	4
		very many						Xing Huo	5
20.	**(*)**	**QN**	**VG**	**(+)**	**(b)**	**30**			
		Flower: position relative to leaf							
		below							1
		same level						Zhongshan Hongtai	2
		slightly above						Hong Sijuan	3
		moderately above						Honghu Hong	4
		strongly above						Bian Lian	5
21.	**(*)**	**PQ**	**MG/VG**	**(+)**	**(b)**	**30**			
		Flower: type							
		single						Honghu Hong	1
		semi-double						Cai Xia	2
		double						Dan Sajin	3
		dual-layered						Hongtai Lian	4
		thousand-petalled						Qian Ban	5
22.	**(*)**	**QN**	**MG/MS/VG**		**(b)**	**30**			
		Flower: diameter							
		very small						Chuzi Luo	1
		small						Hong Sijuan	2
		medium						Yijian Lian	3
		large						Honghu Hong	4
		very large						Fen Bawang	5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
23.	**(*)**	**PQ**	**VG**	**(+)**	**(b)**	**30**			
		Flower: shape							
		cup-shaped						Furong Qipa	1
		bowl-shaped						Honghu Hong	2
		plate-shaped						Jin Se	3
		Irregularly shaped						Chenshan Feiyan	4
		head-shaped						Zhizun Qianban	5
		ball-shaped						Nelumbo 'Xiao Hong Dan'	6
24.	**(*)**	**PQ**	**VG**		**(b)**	**30**			
		Flower: color							
		white						Baiyangdian Bai	1
		green						Pujin Diecui	2
		yellow						Yellow Bird	3
		orange						Xingse Chunshan	4
		pink purple						Hongtai Lian	5
		red purple						Weifang Mohong	6
		purple						Nelumbo 'Chenshan Zihe'	7
25.	**(*)**	**QL**	**VG**	**(+)**	**(b)**	**30**			
		Tepal: pattern of secondary color							
		solid						Honghu Hong	1
		flushed						Dan Sajin	2
26.	**(*)**	**QN**	**VG**			**30**			
		Flower: fading of color with age							
		absent or very weak						Yijian Lian	1
		medium						Yi Xian	2
		strong						Bian Lian	3

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27.	**(*)**	**QN**	**MG/MS/VG**	**(+)**	**(b)**	**30**			
		Tepal: number							
		very few						Xianxian Yuzhi	1
		very few to few							2
		few						Honghu Hong	3
		few to medium							4
		medium						Jin Se	5
		medium to many							6
		many						Zhongshan Hongtai	7
		many to very many							8
		very many						Youyi Mudan	9
28.	**(*)**	**PQ**	**VG**	**(+)**	**(c)**	**30**			
		Tepal: shape							
		broad obovate						Jiuhua Haoyue	1
		obovate							2
		oblanceolate						Yijian Lian	3
		narrow oblanceolate						Tan Kong	4
		spatulate						Jiangnan Mingzhu	5
29.	**(*)**	**QN**	**MS/VG**	**(+)**	**(c)**	**30**			
		Tepal: size							
		very small						Chuzi Luo	1
		small						Yanzhi Wan	2
		medium						Yijian Lian	3
		large						Honghu Hong	4
		very large						Fen Bawang	5
30.	**(*)**	**PQ**	**VG**	**(+)**	**(c)**	**30**			
		Tepal: main color on the inner side							
		RHS Colour Chart (indicate reference number)							

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
31.	**(*)**	**PQ**	**VG**	**(+)**	**(c)**	**30**			
		Tepal: distribution of main color							
		throughout						Yijian Lian	1
		distal three quarters						Yanzhi Wan	2
		distal half						Pink Starburst	3
		basal half							4
		basal three quarters						Taohua Mian	5
32.	**(*)**	**PQ**	**VG**		**(c)**	**30**			
		<u>Only varieties with two or more color:</u>Tepal: secondary color							
		RHS Colour Chart (indicate reference number)							
33.	**(*)**	**PQ**	**VG**		**(c)**	**30**			
		<u>Only varieties with two or more color:</u>Tepal: distribution of secondary color							
		at tip							1
		distal quarter							2
		distal half							3
		distal three quarters							4
		basal three quarters							5
		throughout							6
		basal half							7
		basal quarter							8
		at base							9
		at margin							10
		irregular							11
34.	**(*)**	**PQ**	**VG**		**(c)**	**30**			
		Tepal: shape of apex							
		acute							1
		acuminate						Xianxian Yuzhi	2
		obtuse						Honghu Hong	3
		rounded						Jiuhua Haoyue	4
		retuse						Jingshui Guanyin	5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
35.		**QN**	**VG**	**(+)**	**(c)**	**30**			
		Tepal: conspicuousness of abaxial veins							
		absent or weak						Zhongri Youyi	1
		medium						Honghu Hong	2
		strong						Taikong 36	3
36.		**QN**	**MG/MS/VG**	**(+)**		**30**			
		Stamen: number							
		absent						Zhizun Qianban	1
		very few						Piaocheng Fanying	2
		few						Zhongshan Hongtai	3
		medium						Hong Sijuan	4
		many						Yijian Lian	5
		very many						Jianxuan 17	6
37.	**(*)**	**QL**	**VG**		**(b)**	**30**			
		Anther: color							
		yellow							1
		orange							2
38.	**(*)**	**PQ**	**VG**		**(b)**	**30**			
		Stamen appendage: color							
		white						Baiyangdian Bai	1
		white with purple-pink spotted apex						Hong Mudan	2
		light-yellow						Yellow Bird	3
		purple-pink						Yijian Lian	4
		purple-red						Gudu Jiangfang	5
		dark-brown in upper part							6
39.		**PQ**	**VG**	**(+)**	**(b)**	**30**			
		Stamen appendage: shape							
		long-ellipsoid							1
		obovoid							2
		long-obovoid							3
		hastiform						Jiangnan Mingzhu	4

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
40.		**QN**	**MS/VG**		**(b)**	**30**			
		Stamen appendage: length							
		very short							1
		short						Fenhong Lingxiao	2
		medium						Honghu Hong	3
		long							4
		very long						Jin Fuwa	5
41.	**(*)**	**PQ**	**VG**	**(+)**		**20-30**			
		Carpel: status of development							
		normal						Honghu Hong	1
		partially bubbled							2
		completely bubbled						Qinhuai Yueye	3
		partially petaloid						Huang Lingyang	4
		completely petaloid						Zhizun Qianban	5
42.	**(*)**	**QN**	**MG**			**20-40**			
		Carpel: number							
		absent						Qian Ban	1
		very few						Hong Sijuan	2
		few						Chuzi Luo	3
		medium						Yi Xian	4
		many						Taikong 36	5
		very many						Jianxuan 17	6
43.		**PQ**	**VG**		**(b)**	**30**			
		Receptacle: color of top surface							
		yellow							1
		green-yellow							2
		yellow-green							3
		green						Cuixin Xiangyang	4

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
44.	**(*)**	**QN**	**VG**	**(+)**		**20-30**			
		Receptacle: degree of degeneration							
		absent							1
		partial degeneration						Hongtai Lian	2
		complete degeneration						Zhizun Qianban	3
45.		**PQ**	**VG**	**(+)**	**(d)**	**30-40**			
		Seedpod: shape							
		trumpet-shaped						Hong Sijuan	1
		obconical						Jin Furong 2	2
		cup-shaped						Jin Fuwa	3
		bowl-shaped						Perry`s Giant Suburst	4
		oblate							5
		umbrella-shaped						Thai Hongyuan	6
46.		**PQ**	**VG**	**(+)**	**(d)**	**30-40**			
		Seedpod: color of top surface							
		grey-green						Cuixin Xiangyang	1
		green						Honghu Hong	2
		green-yellow							3
		purple-red						Cai Xia	4
47.		**PQ**	**VG**	**(+)**	**(d)**	**30-40**			
		Seedpod: shape of top surface							
		concave						Jin Furong 2	1
		plate-like concave							2
		flat							3
		slightly convex							4
		convex							5
48.		**QN**	**VG**	**(+)**	**(d)**	**30-40**			
		Seedpod: groove depth of margin							
		absent or very shallow						Jianxuan 17	1
		shallow							2
		medium						Jiuhua Haoyue	3
		deep							4

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
49.	**(*)**	**QN**	**VG**		**(d)**	**30-40**			
		Fruit: rate of fruit setting							
		absent						Zhizun Qianban	1
		very low							2
		low						Moling Qiuse	3
		medium						Jiuhua Haoyue	4
		high						Jin Furong 2	5
		very high						Honghu Hong	6
50.		**QN**	**MG/VG**	**(+)**	**(d)**	**30-40**			
		Fruit: position relative to top surface of seedpod							
		below							1
		same level							2
		weakly above							3
		moderately above							4
		strongly above							5
51.	**(*)**	**PQ**	**VG**	**(+)**		**30-40**			
		Fruit: shape							
		ovoid							1
		narrow ovoid							2
		globose						Jiuhua Haoyue	3
		ellipsoid						Honghu Hong	4
		narrow ellipsoid							5
		obovoid							6
		narrow obovoid							7
52.	**(*)**	**QN**	**VG**	**(+)**	**(d)**	**30-40**			
		Fruit: anthocyanin coloration of endocarp							
		absent							1
		weak						Dan Sajin	2
		medium						Honghu Hong	3
		strong						Yijian Lian	4

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
53.	**(*)**	**QN**	**MG/MS/VG**	**(+)**	**(e)**	**30-40**			
		Fruit: size							
		very small						Chuzi Luo	1
		small							2
		medium						Honghu Hong	3
		large						Jiuhua Haoyue	4
		very large						Jianxuan 17	5
54.		**PQ**	**VG**	**(+)**	**(e)**	**30-40**			
		Fruit: color							
		brown						Yellow Bird	1
		grey brown							2
		grey						Honghu Hong	3
		black or dark brown						Jiuhua Haoyue	4
55.	**(*)**	**QN**	**VG**	**(+)**	**(e)**	**30-40**			
		Fruit: waxy powder							
		absent or weak						Honghu Hong	1
		medium						Yanzhi Wan	2
		strong						Perry`s Giant Suburst	3
56.		**QN**	**VG**	**(+)**	**(e)**	**30-40**			
		Fruit: glossiness							
		absent or weak						Yingquan Xike	1
		medium						Jiuhua Haoyue	2
		strong							3
57.	**(*)**	**QN**	**VG**	**(+)**	**(e)**	**30-40**			
		Fruit: conspicuousness of longitudinal stripes							
		absent or weak						Honghu Hong	1
		medium						Jiuhua Haoyue	2
		strong							3

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
58.		**PQ**	**VG**	**(+)**		**30-40**			
		Expanded rhizome: color							
		white						Elian 1	1
		yellow brown							2
		brown red							3
59.		**QN**	**VG**			**40**			
		Expanded rhizome: time of maturity							
		early						Elian 7	1
		medium						Elian 6	2
		late						Elian 8	3
60.	**(*)**	**QN**	**MG/MS/VG**			**40-50**			
		Expanded rhizome: thickness							
		very thin						Fenhong Lingxiao	1
		thin						Bian Lian	2
		medium						Hong Sijuan	3
		thick						Wu Fei	4
		very thick						Elian 1	5
61.		**QN**	**MG/MS/VG**			**40-50**			
		Main expanded rhizome: number of internodes							
		absent or very few						Fenhong Lingxiao	1
		few							2
		medium							3
		many						Elian 1	4
62.	**(*)**	**PQ**	**VG**			**40-50**			
		Main expanded rhizome: shape of internode							
		ovoid or ellipsoid							1
		short tubular							2
		medium tubular						Elian 1	3
		long tubular						Zhongshan Hongtai	4
		very long tubular							5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
63.		**QN**	**MS/VG**			**40-50**			
		Expanded rhizome: number of branches (for rhizome lotus only)							
		few							1
		medium							2
		many							3
64.	**(*)**	**QN**	**MG/MS/VG**	**(+)**		**40-50**			
		Rhizome propagule: number							
		absent or very few						Fenhong Lingxiao	1
		few						Zhongshan Hongtai	2
		medium							3
		many							4
		very many							5
65.	**(*)**	**QL**	**VG**	**(+)**		**40-50**			
		Terminal internode: shape of apex (for rhizome lotus only)							
		acute							1
		obtuse							2
66.		**PQ**	**VG**			**40-50**			
		Rhizome shoot: color							
		white						Anhui Piaohua	1
		light-yellow							2
		purple-red							3
		light-brown						Jinghua Dabai	4
67.		**QL**	**VG**			**40-50**			
		Expanded rhizome: texture of surface (for rhizome lotus only)							
		smooth						Anhui Piaohua	1
		rough							2

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
68.	**(*)**	**PQ**	**VG**			**40-50**			
		Expanded rhizome: texture of flesh (for rhizome lotus only)							
		crispy						Elian 1	1
		intermediate						Elian 4	2
		starchy						Elian 5	3

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

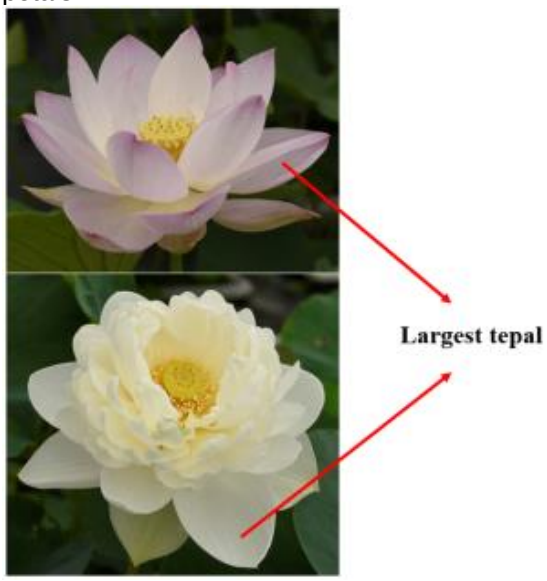
Characteristics containing the following key in the Table of Characteristics should be examined as indicated below:

(a) Lotus usually has both floating leaves and standing leaves. The floating leaf has soft petiole with leaf blade floating on water surface. The standing leaf has erect petiole with leaf blade above water (arrow indicates in figure). All observations on leaves should be made on standing leaves and the later mentioned characteristics related to leaves are only associated with the varieties with standing leaves.

(b) For flower, all characteristics are observed and measured on day 2 flower around 8:00–10:00 am (7:00-9:00 am in hot summer) except a few of special varieties, because a flower, particularly single and semidouble flower types, starts to open in the early morning and completely closes afternoon from day 1 to day 3. One flower usually lasts for only four days and then its tepals fall off on the 5th day or afternoon of the 4th day. For most of varieties, the second day flower has the best appearance.

Flowering time of a flower

(c) Since the shape, size and color may change much from outer to inner whorls of tepals, therefore, only the largest or nearly largest tepal of flower based on (a) is used for comparison in shape, size and color. The largest or nearly largest tepal is located at around the position where the half number of total tepals of a flower is counted for a single form flower. For double form flower, it is treated as single form flower without considering petaloid petals.



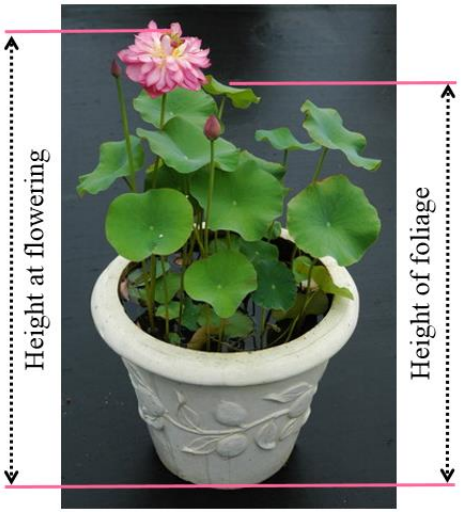
(d) Observations should be made on the seedpod near mature or completely mature before fruit color starting change.

(e) Observations should be made on dried mature fruits.

8.2 Explanations for individual characteristics

Ad. 1: Plant: height of foliage

Plant height of lotus is defined by the height of the tallest leaf or flower, and it must be measured from the base of petiole (or stalk) to the top of leaf blade (or flower) to meet DUS test requirement. Lotus plant usually can not reach the tallest before flowering peak, therefore plant height must be measured right after flowering peak.



Measurement of plant height of foliage and plant height at flowering

Ad. 2: Plant: height at flowering

See Ad.1

Ad. 4: Leaf blade: size

Size of leaf blade can be calculated by (Length + Width)/2 cm.

Ad. 5: Leaf blade: variegation

1	9
absent	present

Ad. 6: Leaf blade: main color

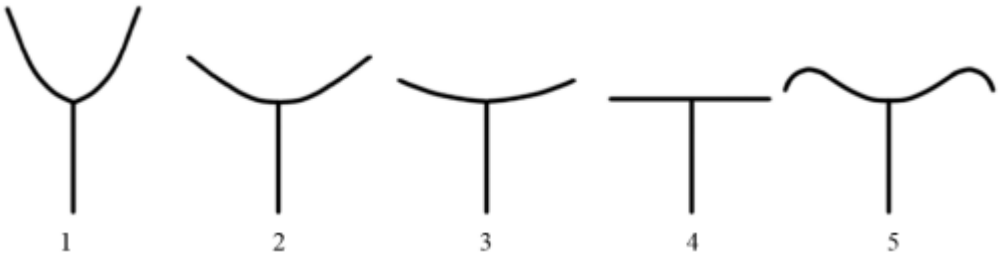
1 light or medium green | 2 dark green | 3 yellow green

Ad. 7: Leaf blade: shape

1 rounded or nearly rounded | 2 elliptic | 3 narrow elliptic

Ad. 8: Leaf blade: shape in longitudinal section

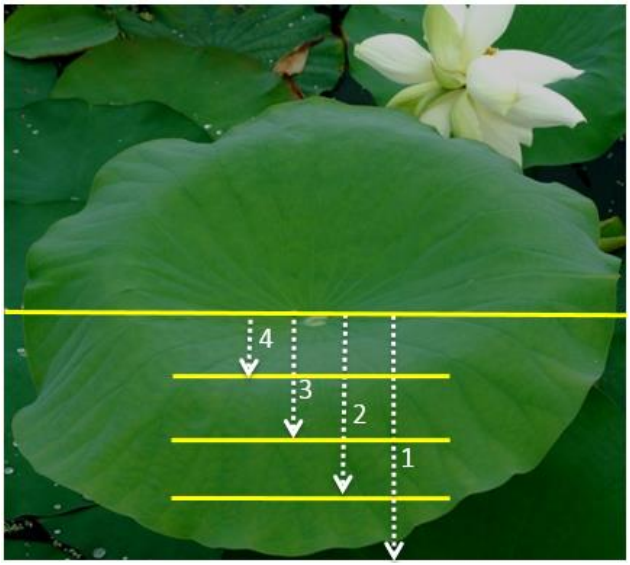
The longitudinal section of leaf blade should be based on observation of mature standing leaves.



1 strongly concave | 2 moderately concave | 3 weakly concave | 4 flat | 5 concave center with dropping edge

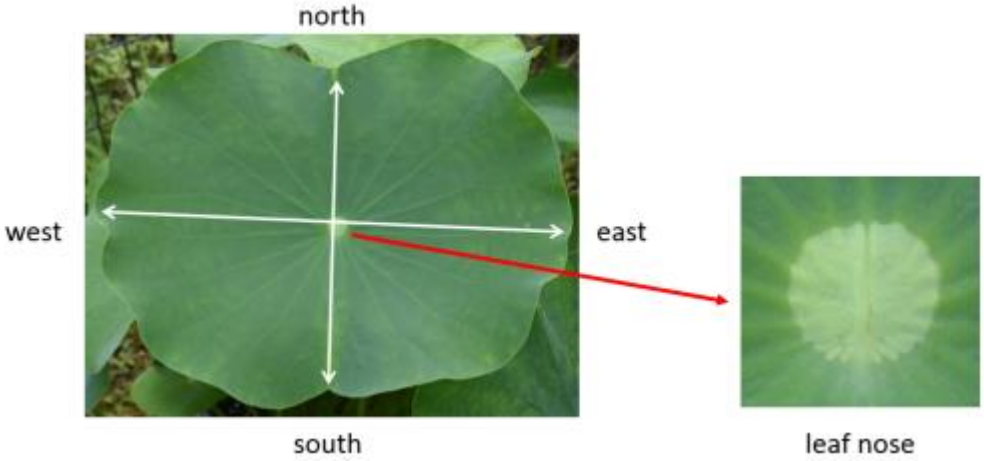
Ad. 9: Leaf blade: texture of upper surface

The adaxial surface texture of mature leaf can be identified by finger touch based on rough or smooth area, and degree of roughness or smoothness.
1. Very smooth: fully smooth
2. Smooth: 3/4 or more leaf area is smooth
3. Medium : half leaf area is smooth (or half leaf area is rough)
4. Rough: 1/4 or less leaf area is smooth (or 3/4 or more leaf area is rough)
5. Very rough: fully rough



Ad. 10: Leaf blade: depth of concavity

Definition on direction of leaf blade: actually the lotus leaf is bilaterally symmetricconsidering shape of both blade and its nose (leaf center). It is convenient for describing leaf apex by defining direction of blade side like photo showing below. For leaf edge, usually the middle position of northern side (upper side) is more concave than that of southern side (lower side). Therefore, for shape of leaf apex, only the northern side is observed for comparison.



1	2	3	4
absent or very shallow	shallow	medium	deep

Ad. 11: Leaf blade: red line of margin

1
absent

9
present

Ad. 12: Leaf blade: gap of nose

Definition: leaf nose is the nose-shaped structure located at the center of leaf. The distance between two halves of nose is defined as nose gap. The wild American lotus and some hybrid of American-Asian lotus have the widest gap, Asian lotus have the narrowest gap, and most of Asian-American hybrids have intermediate gap.

1
absent or very narrow

2
narrow

3
medium

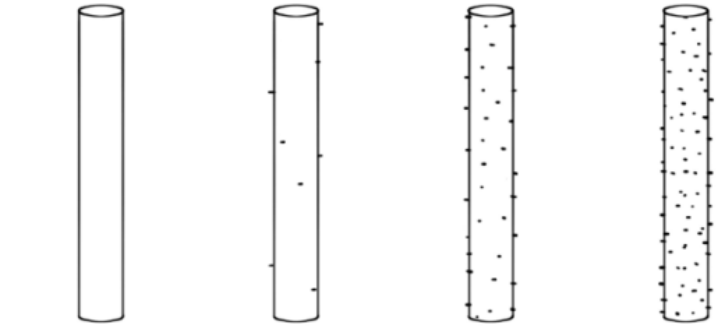
4
broad

Ad. 13: Petiole: thickness

The diameter of petiole should be measured from the middle position of petiole for mature leaf.

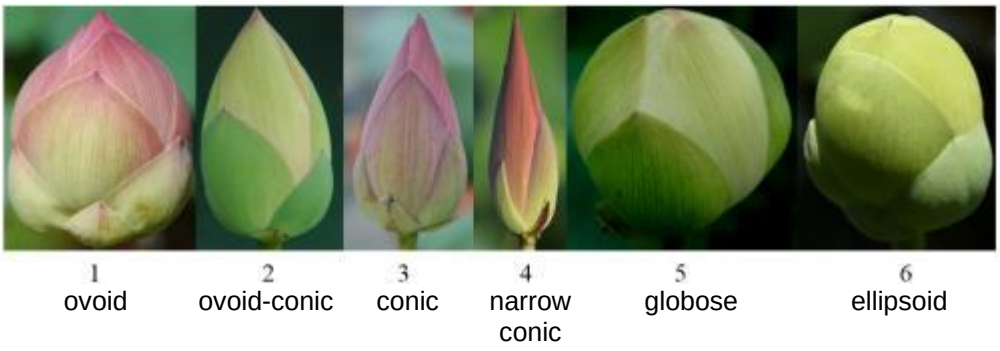
Ad. 14: Petiole: density of spines

Spine density is observed based on the middle position of petiole since it is not evenly distributed from base to top of petiole.



Ad. 15: Flower bud: shape

The shape of flower buds should be observed at least two days before opening.



Ad. 17: Flowering: time of starting to bloom

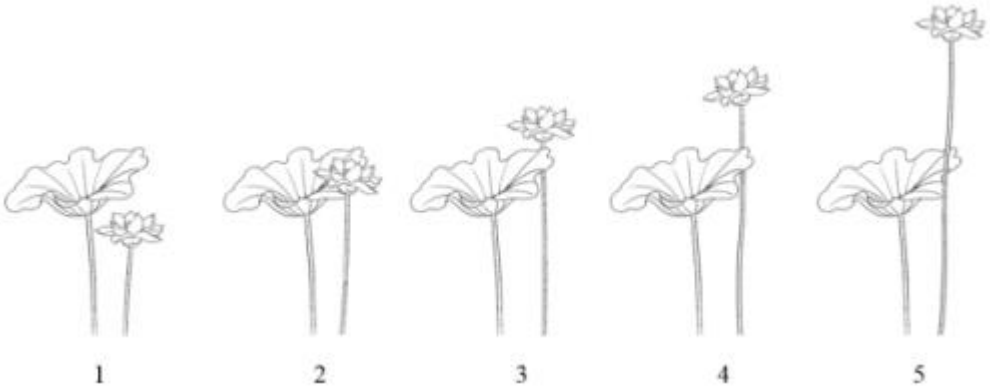
Defined by 30% plants starting to bloom.

Ad. 18: Flowering time

Defined by the period from when 30% plants started to bloom and to whan 30% plants remain flowers near the end of flowering season.

Ad. 20: Flower: position relative to leaf

The position of flower in relation to leaf is based on the relative height of a flower and its accompanying leaf for comparability. For the varieties without flowers, this data is not collected.



1 below | 2 same level | 3 slightly above | 4 moderately above | 5 strongly above

Ad. 21: Flower: type

Definition of flower type
1. Single type: flower without petaloidity of stamens.
2. Semidouble type: flower with petaloidity of partial stamens.
3. Double type: tepal number usually over 40 with petaloidity of partial or all stamens.
4. Dual-layered type: a special type of double flower, its petaloid carpels form another layer of flower tepals which is separated from normal tepal layer by stamens.
5. Thousand-petalled type: a very unique type of double flower, in which, both stamens and carpls are not only completely petaloid, the petaloid tissue continues developing into numerous petals during flower opening. The total number of tepals (petals) is at least more than one thousand.

1 single | 2 semidouble | 3 double | 4 dual-layered | 5 thousand-petalled

Ad. 23: Flower: shape

Definition and classification on flower shape
1. Cup-shaped: for the first day flower of most lotus cultivars, it can not fully open and looks like a cup. For a very few of cultivars, the second day flower also can not fully open.
2. Bowl-shaped: the second day flower can be usually fully open like a bowl.
3. Plate-shaped: the fully open flower looks like a plate, with nearly horizontally arranged tepals.
4. Irregularly shaped: a special flower shape of usually single flower, with irregularly arranged tepals.
5. Head-shaped: the head-shaped and fully double flower with numerous tepals, most of which come from petaloid stamens and carpels.
6. Ball-shaped: for a very few cultivars, some or most of the flower buds can not open and remain a ball shape.

1 2 3 4 5 6

Ad. 25: Tepal: pattern of secondary color

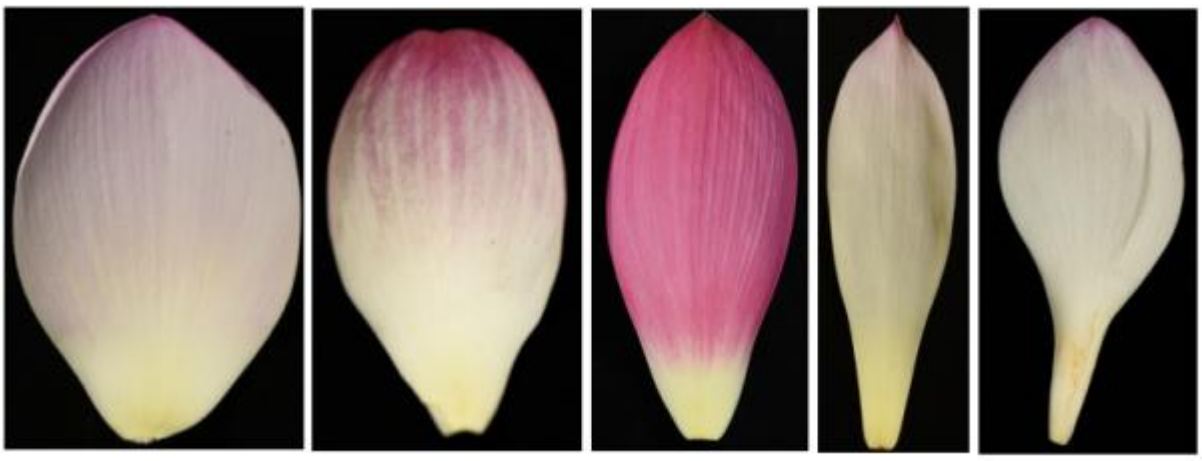
The pattern of secondary color distribution on flower is observed on the tepals of outer whorls, excluding tepal base.

1 solid 2 flushed

Ad. 27: Tepal: number

The number of tepals cound be counted between the small bud stage and day 2 flower as all tepals remain. All tepals should be counted, including the outermost ones.

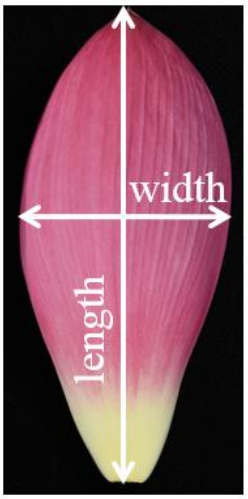
Ad. 28: Tepal: shape



1 broad obovate 2 obovate 3 oblanceolate 4 narrow oblanceolate 5 spatulate

Ad. 29: Tepal: size

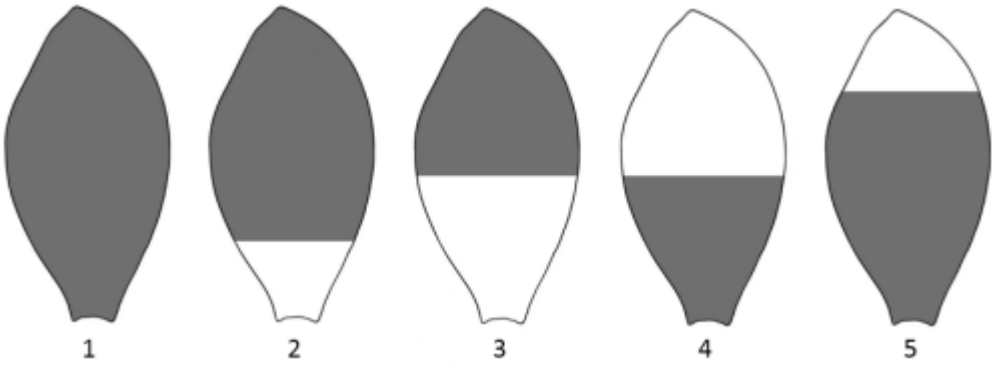
The size of tepal is defined by calculation according to (length x width)/2 cm^2.



Ad. 30: Tepal: main color on the inner side

The main color is measured by RHS Color Chart during 8:00 am and 10:00 am (7:00 - 9:00 am in peak summer) based on the largest tepal of the day 2 flower.

Ad. 31: Tepal: distribution of main color



throughout | distal three quarters | distal half | basal half | basal three quarters

Ad. 35: Tepal: conspicuousness of abaxial veins

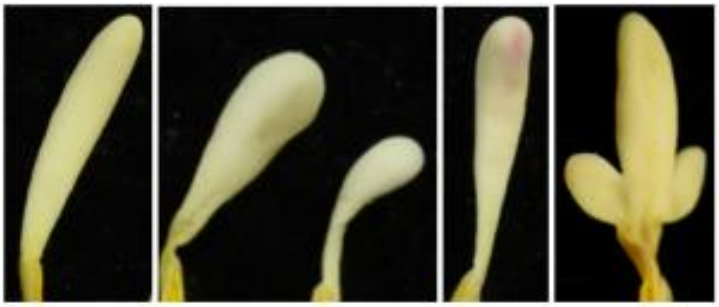
The longitudinal veins on tepal should be observed on abaxial surface of tepal (largest one or nearly so).

1 absent or weak | 2 medium | 3 strong

Ad. 36: Stamen: number

The number of stamens can be counted between bud stage and day 3 flower as all stamens remain on the flower bud or flower.

Ad. 39: Stamen appendage: shape



1 long-ellipsoid | 2 obovoid | 3 long-obovoid | 4 hastiform

Ad. 41: Carpel: status of development

The development status of carpels can be observed at the stages between day 1 flower and mature seedpod.
1. Normal: all carpels develop normally;
2. Partially bubbled: part of carpels become bubbled (degerated) and could not develop into the fruits;
3. Completely bubbled: all carpels become bubbled and could not develop into the fruits;
4. Partially petaloid: part of carpels become petaloid;
5. Completely petaloid: all carpels become petaloid.

1 2 3 4 5

Ad. 44: Receptacle: degree of degeneration

1 absent | 2 partial degeneration | 3 complete degeneration

Ad. 45: Seedpod: shape

1 trumpet-shaped | 2 obconical | 3 cup-shaped | 4 bowl-shaped | 5 oblate | 6 umbrella-shaped

Ad. 46: Seedpod: color of top surface

1 grey-green | 2 green | 3 green-yellow | 4 purple-red

Ad. 47: Seedpod: shape of top surface

1 concave | 2 plate-like concave | 3 flat | 4 slightly convex | 5 convex

Ad. 48: Seedpod: groove depth of margin

1	2	3	4
absent or very shallow	shallow	medium	deep

Ad. 50: Fruit: position relative to top surface of seedpod

1	3	4	5
below	weakly above	moderately above	strongly above

Ad. 51: Fruit: shape

The shape of fruits can be observed based on fresh or dried mature fruits.

1	2	3	4	5	6	7
ovoid	narrow ovoid	globose	ellipsoid	narrow ellipsoid	obovoid	narrow obovoid

Ad. 52: Fruit: anthocyanin coloration of endocarp

For some varieties, the color may be different in two halves of endocarp, and in such case, the characteristic should be based on the half with deeper color.

1 absent | 2 weak | 3 medium | 4 strong

Ad. 53: Fruit: size

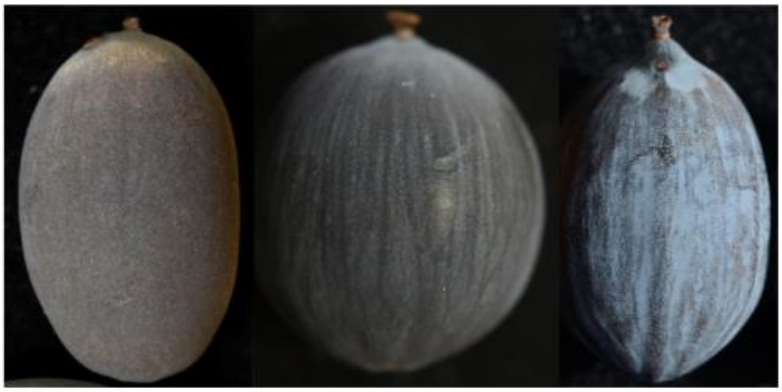
The size of dried fruit is calculated by (Length X Width)/2.

Ad. 54: Fruit: color

The color of dried fruits should be observed after the white waxy powder of fruit surface is removed.

1 brown | 2 grey brown | 3 grey | 4 black or dark brown

Ad. 55: Fruit: waxy powder



1 absent or weak | 2 medium | 3 strong

Ad. 56: Fruit: glossiness

Glossiness of the dried fruits should be observed on the mature fruits, on which the waxy powder should be wiped off.

1 absent or weak | 2 medium | 3 strong

Ad. 57: Fruit: conspicuousness of longitudinal stripes

1 absent or weak | 2 medium | 3 strong

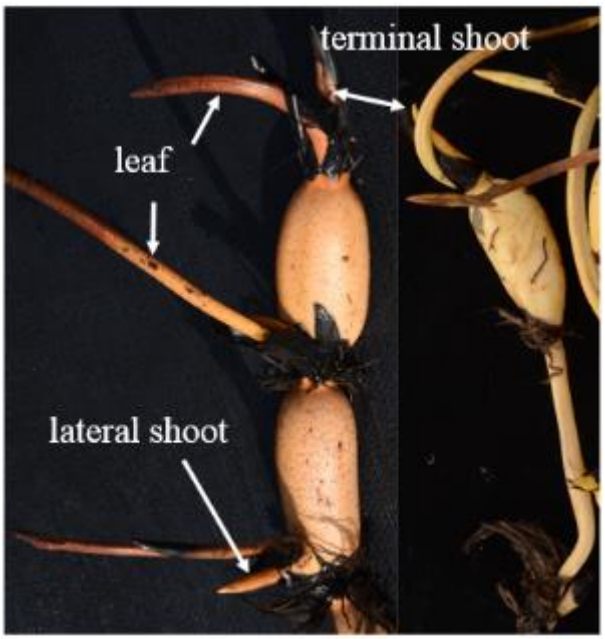
Ad. 58: Expanded rhizome: color

Since the color of expanded rhizome may be different between early developing stage and late mature stage, it should be observed after lotus entered into dormancy in the fall.

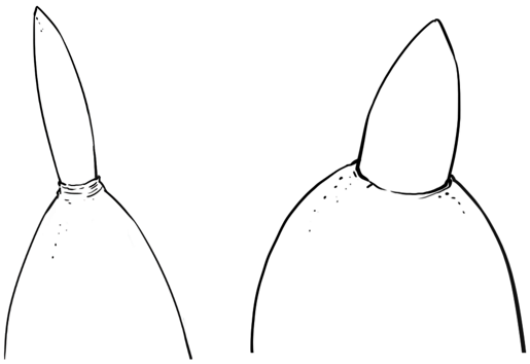
1 white | 2 yellow brown | 3 brown red

Ad. 64: Rhizome propagule: number

The number of rhizome propagules is based on count of the standard rhizome propagule which consists of two internodes (usually two or one expanded) with terminal shoot at least.



Ad. 65: Terminal internode: shape of apex (for rhizome lotus only)



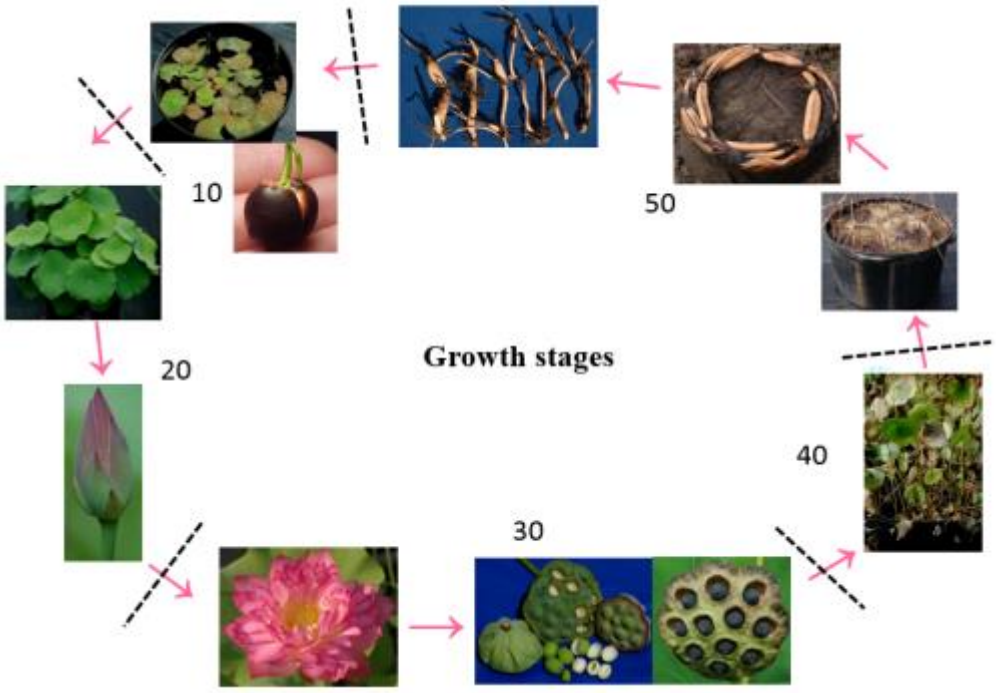
1
acute

2
obtuse

8.3 Additional Explanations on the Table of Characteristics

Growth stages

10 Growth of shoots, coin leaves and floating leaves after planting in spring;
20 Growth of emerging leaves and flower buds before flowering in early summer;
30 Flowering, fruit setting, fruit maturation and rhizome expansion between summer and fall;
40 Leaf aging, yellowing, and died after end of flowering in fall;
50 Plant dormancy in winter.



During growth season, some of the flowers and mature fruits along with seedpods will he collected for observation or measurement, but it has no influence on plant development and growth. At the end of growth cycle, the underground rhizomes during dormancy may be collected for observation of shoot shape, measurement of expanded rhizome diameter and counting of propagule number.

Type of lotus: based on its main use, lotus is commonly divided into three types: rhizome lotus, seed lotus and flower lotus.

(1) The rhizome lotus is mainly used for production of rhizome as vegetable or starch source. It rarely blooms or has fewer flowers but thicker rhizome than seed lotus and flower lotus.

(2) The seed lotus is mainly used for production of seeds as source of fruits or starch. Its fruits are larger than those of both rhizome lotus and flower lotus. The seed lotus is also considered as flower lotus due to its many beautiful flowers.

(3) The flower lotus, also called ornamental lotus, is mainly used for flower appreciation. It is easy to bloom but many varieties of this type lotus may be sterile.

9. Literature

Agricultural Department of China. 2015. Guidlines for The Conduct of Tests for Distinctness, Uniformity and Stability——Lotus (*Nelumbo* Adans.) , Standards of Agricultural Industry of China (NY/T 2756—2015）. China Agriculture Press, Beijing, China, 15pp.

Agricultural Department of China. 2016. Descriptor for Lotus Germplasm Resources. Standards of Agricultural Industry of China (NY/T 2937—2016）. . China Agriculture Press, Beijing, China, 17pp.

Ke WD, Li F, et al. 2005. Descriptors and Data Standard for Lotus (*Nelumbo nucifera* Gaertn.). China Agriculture Press, Beijing, China, 85pp.

Tian DK. 2020. Application to Register a Cultivar of Nelumbo. 8pp. https://iwgs.org/nymphaea-and-nelumbo-registration/ (2023-2-26 accessed).

Wang QC, Zhang XY. 2005. Colored Illustration of Lotus Cultivars in China. China Forestry Press, Beijing, China, 306pp.

10. Technical Questionnaire

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

	Application date: (not to be filled in by the applicant)

TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

In the case of hybrid varieties which are the subject of an application for plant breeders' rights, and where the parent lines are to be submitted as a part of the examination of the hybrid variety, this Technical Questionnaire should be completed for each of the parent lines, in addition to being completed for the hybrid variety.

1. Subject of the Technical Questionnaire

1.1.1	Botanical name	*Nelumbo* Adans. ☐
1.1.2	Common name	Lotus

2. Applicant

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

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

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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 parent variety(ies))

(……..……..…) x (……..……..…)

female parent male parent

(c) unknown cross [ ]

4.1.2 Mutation
(please state parent variety)

4.1.3 Discovery and development
(please state where and when discovered and how developed)

4.1.4 Other
(Please provide details)

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

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

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

(a) Cross-pollination	[ ]
(b) Hybrid	[ ]
(i) Single hybrid	[ ]
(c) Inbred line	[ ]
(i) Male sterile line	[ ]
(ii) Male fertile line	[ ]
(d) Apomictic Variety	[ ]
(e) Other (please provide details)	[ ]

4.2.2 Vegetative propagation

(a) In vitro propagation	[ ]
(b) Division	[ ]
(c) Rhizomes	[ ]
(d) Other (state method)	[ ]

4.2.3 Other

(Please provide details) [ ]

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 (1)	**Plant: height of foliage**		
	very short	Chuzi Luo	1 [ ]
	very short to short		2 [ ]
	short	Xing Huo	3 [ ]
	short to medium		4 [ ]
	medium	Yijian Lian	5 [ ]
	medium to tall		6 [ ]
	tall	Yellow Bird	7 [ ]
	tall to very tall		8 [ ]
	very tall	Fen Bawang	9 [ ]
5.2 (9)	**Leaf blade: texture of upper surface**		
	very smooth	Yellow Bird	1 [ ]
	smooth	Fenhong Lingxiao	2 [ ]
	medium		3 [ ]
	rough	Honghu Hong	4 [ ]
	very rough	Daye Chi	5 [ ]
5.3 (12)	**Leaf blade: gap of nose**		
	absent or very narrow	Jia Jingying	1 [ ]
	narrow	Honghu Hong	2 [ ]
	medium	Yijian Lian	3 [ ]
	broad	Yellow Bird	4 [ ]
5.4 (20)	**Flower: position relative to leaf**		
	below		1 [ ]
	same level	Zhongshan Hongtai	2 [ ]
	slightly above	Hong Sijuan	3 [ ]
	moderately above	Honghu Hong	4 [ ]
	strongly above	Bian Lian	5 [ ]

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

	Characteristics	Example Varieties	Note
5.5 (21)	**Flower: type**		
	single	Honghu Hong	1 [ ]
	semi-double	Cai Xia	2 [ ]
	double	Dan Sajin	3 [ ]
	dual-layered	Hongtai Lian	4 [ ]
	thousand-petalled	Qian Ban	5 [ ]
5.6 (23)	**Flower: shape**		
	cup-shaped	Furong Qipa	1 [ ]
	bowl-shaped	Honghu Hong	2 [ ]
	plate-shaped	Jin Se	3 [ ]
	Irregularly shaped	Chenshan Feiyan	4 [ ]
	head-shaped	Zhizun Qianban	5 [ ]
	ball-shaped	Nelumbo 'Xiao Hong Dan'	6 [ ]
5.7 (24)	**Flower: color**		
	white	Baiyangdian Bai	1 [ ]
	green	Pujin Diecui	2 [ ]
	yellow	Yellow Bird	3 [ ]
	orange	Xingse Chunshan	4 [ ]
	pink purple	Hongtai Lian	5 [ ]
	red purple	Weifang Mohong	6 [ ]
	purple	Nelumbo 'Chenshan Zihe'	7 [ ]
5.8 (29)	**Tepal: size**		
	very small	Chuzi Luo	1 [ ]
	small	Yanzhi Wan	2 [ ]
	medium	Yijian Lian	3 [ ]
	large	Honghu Hong	4 [ ]
	very large	Fen Bawang	5 [ ]

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

	Characteristics	Example Varieties	Note
5.9 (41)	**Carpel: status of development**		
	normal	Honghu Hong	1 [ ]
	partially bubbled		2 [ ]
	completely bubbled	Qinhuai Yueye	3 [ ]
	partially petaloid	Huang Lingyang	4 [ ]
	completely petaloid	Zhizun Qianban	5 [ ]
5.10 (51)	**Fruit: shape**		
	ovoid		1 [ ]
	narrow ovoid		2 [ ]
	globose	Jiuhua Haoyue	3 [ ]
	ellipsoid	Honghu Hong	4 [ ]
	narrow ellipsoid		5 [ ]
	obovoid		6 [ ]
	narrow obovoid		7 [ ]
5.11 (52)	**Fruit: anthocyanin coloration of endocarp**		
	absent		1 [ ]
	weak	Dan Sajin	2 [ ]
	medium	Honghu Hong	3 [ ]
	strong	Yijian Lian	4 [ ]
5.12 (56)	**Fruit: glossiness**		
	absent or weak	Yingquan Xike	1 [ ]
	medium	Jiuhua Haoyue	2 [ ]
	strong		3 [ ]
5.13 (60)	**Expanded rhizome: thickness**		
	very thin	Fenhong Lingxiao	1 [ ]
	thin	Bian Lian	2 [ ]
	medium	Hong Sijuan	3 [ ]
	thick	Wu Fei	4 [ ]
	very thick	Elian 1	5 [ ]

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

	Characteristics	Example Varieties	Note
5.14 (62)	**Main expanded rhizome: shape of internode**		
	ovoid or ellipsoid		1 [ ]
	short tubular		2 [ ]
	medium tubular	Elian 1	3 [ ]
	long tubular	Zhongshan Hongtai	4 [ ]
	very long tubular		5 [ ]
5.15 (63)	**Expanded rhizome: number of branches (for rhizome lotus only)**		
	few		1 [ ]
	medium		2 [ ]
	many		3 [ ]
5.16 (64)	**Rhizome propagule: number**		
	absent or very few	Fenhong Lingxiao	1 [ ]
	few	Zhongshan Hongtai	2 [ ]
	medium		3 [ ]
	many		4 [ ]
	very many		5 [ ]
5.17 (68)	**Expanded rhizome: texture of flesh (for rhizome lotus only)**		
	crispy	Elian 1	1 [ ]
	intermediate	Elian 4	2 [ ]
	starchy	Elian 5	3 [ ]

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

6. Similar varieties and differences from these varieties

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

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example			

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

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:

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]