



TG/CALSP(proj.4)

ORIGINAL: English

DATE: 2014-07-14

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

CHINA ASTER

UPOV Code: CALSP_CHI

Callistephus chinensis (L.) Nees

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

*prepared by an expert from Japan**to be considered by the**Enlarged Editorial Committee at its meeting
to be held in Geneva, on January 7 and 8, 2015**Disclaimer: this document does not represent UPOV policies or guidance*Alternative Names:^{*}

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Callistephus chinensis</i> (L.) Nees	China Aster, Annual Aster	Aster, Aster de Chine, Reine-marguerite	Sommeraster	Aster de China

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.]

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
1. SUBJECT OF THESE TEST GUIDELINES.....	3
2. MATERIAL REQUIRED.....	3
3. METHOD OF EXAMINATION	3
3.1 NUMBER OF GROWING CYCLES	3
3.2 TESTING PLACE	3
3.3 CONDITIONS FOR CONDUCTING THE EXAMINATION	3
3.4 TEST DESIGN	3
3.5 ADDITIONAL TESTS.....	4
4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY	4
4.1 DISTINCTNESS	4
4.2 UNIFORMITY	5
4.3 STABILITY.....	5
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL.....	5
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS.....	6
6.1 CATEGORIES OF CHARACTERISTICS	6
6.2 STATES OF EXPRESSION AND CORRESPONDING NOTES	6
6.3 TYPES OF EXPRESSION	6
6.4 EXAMPLE VARIETIES.....	6
6.5 LEGEND	7
7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTÈRES/MERKMALSTABELLE/TABLA DE CARACTERES	8
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS.....	15
8.1 EXPLANATIONS COVERING SEVERAL CHARACTERISTICS	15
8.2 EXPLANATIONS FOR INDIVIDUAL CHARACTERISTICS	15
9. LITERATURE	22
10. TECHNICAL QUESTIONNAIRE.....	23

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Callistephus chinensis* (L.) Nees.

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:

a sufficient quantity of seed to produce 40 plants.

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*

The minimum duration of tests should normally be a single growing cycle.

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 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 Each test should be designed to result in a total of at least 40 plants.

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

3.5 *Additional Tests*

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 *Distinctness*

4.1.1 General Recommendations

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

4.1.2 Consistent Differences

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

4.1.3 Clear Differences

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

4.1.4 Number of Plants / 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 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 second column of 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 For the assessment of uniformity of mainly self-pollinated varieties, a population standard of 1% and acceptance probability of at least 95% should be applied. In the case of a sample size of 40 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.

4.3.3 Where appropriate, or in cases of doubt, 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 are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

- (a) Plant: height (characteristic 1)
- (b) Flower head: type (characteristic 15)
- (c) Flower head: diameter (characteristic 17)
- (d) Outer ray floret: shape (characteristic 22)
- (e) Outer ray floret: main color of inner side (characteristic 25) with the following groups:
 - Gr. 1: white
 - Gr. 2: yellow
 - Gr. 3: orange
 - Gr. 4: pink
 - Gr. 5: red
 - Gr. 6: purple
 - Gr. 7: violet
- (f) Disc: type (characteristics 36)

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 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	Note
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

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*

- | | | |
|----------------|--|---------------------|
| (*) | Asterisked characteristic | – see Chapter 6.1.2 |
| QL | Qualitative characteristic | – see Chapter 6.3 |
| QN | Quantitative characteristic | – see Chapter 6.3 |
| PQ | Pseudo-qualitative characteristic | – see Chapter 6.3 |
| MG, MS, VG, VS | | – see Chapter 4.1.5 |
| (a)-(g) | See Explanations on the Table of Characteristics in Chapter 8.1 | |
| (+) | See Explanations on the Table of Characteristics in Chapter 8.2. | |

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

	English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
1. VG/ MS (+)	Plant: height	Plante : hauteur	Pflanze: Höhe	Planta: altura		
QN	short	basse	kurz	baja	Gyokurei Rose	3
	medium	moyenne	mittel	media	Petit White	5
	tall	haute	hoch	alta	Sanhana Purple	7
2. VG/ MS	Plant: width	Plante : largeur	Pflanze: Breite	Planta: anchura		
QN	narrow	étroite	schmal	estrecha	Sanhana Purple	3
	medium	moyenne	mittel	media	San Petit Purple	5
	broad	large	breit	ancha	Koma Purple	7
3. VG/ MS (+)	Plant: number of primary lateral shoots	Plante : nombre de rameaux latéraux primaires	Pflanze: Anzahl primäre Seitentriebe	Planta: número de ramas laterales primarias		
QN	few	petit	gering	pequeño	Fukuhogyoku	3
	medium	moyen	mittel	medio	Ariake Murasaki	5
	many	grand	groß	grande	Chikuma Aka	7
4. VG/ MS (+)	Plant: number of secondary lateral shoots	Plante : nombre de rameaux latéraux secondaires	Pflanze: Anzahl sekundäre Seitentriebe	Planta: número de ramas laterales secundarias		
QN	few	petit	gering	pequeño	Fukuhogyoku	3
	medium	moyen	mittel	medio	Shigyoku	5
	many	grand	groß	grande	Chikuma Aka	7
5. VG (+)	Plant: distribution of primary lateral shoots	Plante : distribution des rameaux latéraux primaires	Pflanze: Verteilung der primären Seitentriebe	Planta: distribución de las ramas laterales primarias		
PQ	mainly on lower part	principalement sur la partie inférieure	hauptsächlich am unteren Teil	principalmente en la parte inferior	Siena Pink	1
	throughout	partout	überall	en la totalidad	Stellar Blue	2
	mainly on upper part	principalement sur la partie supérieure	hauptsächlich am oberen Teil	principalmente en la parte superior	Chikuma Light Pink	3
6. VG/ MS (+)	Stem: number of nodes	Tige : nombre de nœuds	Stengel: Anzahl Knoten	Tallo: número de nudos		
QN	few	petit	gering	pequeño	Fukunohikari	3
	medium	moyen	mittel	medio	Petit Scarlet	5
	many	grand	groß	grande	Sanhana Purple	7
7. VG (*)	Stem: anthocyanin coloration	Tige : pigmentation anthocyanique	Stengel: Anthocyanfärbung	Tallo: pigmentación antocianica		
QN	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Ariake Shiro	1
	weak	faible	gering	débil	Fukuyo	2
	medium	moyenne	mittel	media	Shigyoku	3
	strong	forte	stark	fuerte	Aoitori	4

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8.	VG/ MS	Primary lateral shoot: length	Rameau latéral primaire : longueur	Primärer Seitentrieb: Länge	Rama lateral primaria: longitud	
QN	(a)	short	court	kurz	corta	Mochizuki Blue 3
		medium	moyen	mittel	media	Siena Pink 5
		long	long	lang	larga	Koma Pink 7
9.	VG (+)	Primary lateral shoot: angle in relation to stem	Rameau latéral primaire : angle par rapport à la tige	Primärer Seitentrieb: Winkel im Verhältnis zum Stengel	Rama lateral primaria: ángulo en relación con el tallo	
QN	(a)	small	petit	klein	pequeño	Sanhana Purple 1
		medium	moyen	mittel	mediano	Stellar Red 3
		large	grand	groß	grande	San Petit Purple 5
10.	VG/ MS (+)	Petiole: length	Pétiole : longueur	Blattstiel: Länge	Pecíolo: longitud	
QN	(b)	short	court	kurz	corto	Chikuma Light Blue 3
		medium	moyen	mittel	medio	Siena Carmine Red 5
		long	long	lang	largo	Matsumoto Top Rose 7
11.	VG/ MS (*) (+)	Leaf blade: length	Limbe : longueur	Blattspreite: Länge	Limbo: longitud	
QN	(b)	short	court	kurz	corto	Fukunohikari 3
		medium	moyen	mittel	medio	Stellar Red 5
		long	long	lang	largo	Koma Purple 7
12.	VG/ MS (*) (+)	Leaf blade: width	Limbe : largeur	Blattspreite: Breite	Limbo: anchura	
QN	(b)	narrow	étroit	schmal	estrecho	Fukunohikari 3
		medium	moyen	mittel	medio	Stellar Blue 5
		broad	large	breit	ancho	Stellar Red 7
13.	VG/ MS (+)	Leaf blade: ratio length/width	Limbe : rapport longueur/largeur	Blattspreite: Verhältnis Länge/Breite	Limbo: relación longitud/anchura	
QN	(b)	low	faible	klein	baja	Siena Light Blue 3
		medium	moyen	mittel	media	Fukunokagayaki 5
		high	élevé	groß	alta	Stellar Red 7
14.	VG	Leaf blade: intensity of green color	Limbe : intensité de la couleur verte	Blattspreite: Intensität der Grünfärbung	Limbo: intensidad del color verde	
QN	(b)	light	claire	hell	claro	Matsumoto Mid Blue 1
		medium	moyenne	mittel	medio	Ariake Shiro, Kurenai 2
		dark	foncée	dunkel	oscuro	Athena Purple Flash 3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15. (*) (+)	VG	Flower head: type	Capitule : type	Blütenkopf: Typ	Capítulo: tipo	
QL	(c)	without ray floret	sans fleur ligulée	ohne Zungenblüte	sin lígulas	Hulk 1
		single	simple	einfach	simple	Siena Pink 2
		double	double	gefüllt	doble	Miss Europe, Stellar Blue 3
16. (*)	VG/ MS	<u>Only varieties with: flower head: type: single and double:</u> Flower head: number of ray florets	<u>Seulement variétés avec capitule : type : simple et double :</u> Capitule : nombre de fleurs ligulées	<u>Nur Sorten mit Blütenkopf: Typ: einfach und gefüllt:</u> Blütenkopf: Anzahl Zungenblüten	<u>Solo las variedades con: capítulo: tipo: simple y doble:</u> Capítulo: número de lígulas	
QN	(c)	few	petit	gering	pequeño	Stellar Carmine 3
		medium	moyen	mittel	medio	SAKAST045 5
		many	grand	groß	grande	Racy Rose Red 7
17. (*)	VG/ MS	Flower head: diameter	Capitule : diamètre	Blütenkopf: Durchmesser	Capítulo: diámetro	
QN	(c)	small	petit	klein	pequeño	Stellar Red 3
		medium	moyen	mittel	medio	Fukunokagayaki 5
		large	grand	groß	grande	Koma Pink 7
18. (*) (+)	VG/ MS	Flower head: height	Capitule : hauteur	Blütenkopf: Höhe	Capítulo: altura	
QN	(c)	short	bas	kurz	corto	Stellar Carmine 3
		medium	moyen	mittel	medio	SAKAST044 5
		tall	haut	hoch	alto	Racy Rose Red 7
19. (*)	VG/ MS	Outer ray floret: length	Fleur ligulée externe : longueur	Äußere Zungenblüte: Länge	Lígula exterior: longitud	
QN	(c)	short	courte	kurz	corta	Stellar Carmine 3
	(e)	medium	moyenne	mittel	media	Siena Light Blue 5
		long	longue	lang	larga	Racy Rose Red 7
20. (*)	VG/ MS	Outer ray floret: width	Fleur ligulée externe : largeur	Äußere Zungenblüte: Breite	Lígula exterior: anchura	
QN	(c)	narrow	étroite	schmal	estrecha	SAKAST042 3
	(e)	medium	moyenne	mittel	media	Fukunohikari 5
		broad	large	breit	ancha	Koma Pink 7
21. (*) (+)	VG/ MS	Outer ray floret: ratio length/width	Fleur ligulée externe : rapport longueur/largeur	Äußere Zungenblüte: Verhältnis Länge/Breite	Lígula exterior: relación longitud/anchura	
QN	(c)	low	bas	klein	baja	Fukunokagayaki 3
	(e)	medium	moyen	mittel	media	Stellar Carmine 5
		high	élevé	groß	alta	Racy Rose Red 7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
22.	VG	Outer ray floret: shape	Fleur ligulée externe : forme	Äußere Zungenblüte: Form	Lígula exterior: forma	
PQ	(c)	ligulate	ligulée	zungenförmig	ligulada	1
	(e)	spatulate	spatulée	spatelförmig	espatulada	2
		tubular	tubulaire	röhrenförmig	tubular	3
23.	VG	Outer ray floret: curvature of longitudinal axis	Fleur ligulée externe : courbure de l'axe longitudinal	Äußere Zungenblüte: Biegung der Längsachse	Lígula exterior: curvatura del eje longitudinal	
QN	(c)	incurved	incurvé	aufgebogen	incurvado	1
	(e)	straight	droit	gerade	recto	2
		reflexed	réfléchi	zurückgebogen	reflexo	3
24.	VG	Outer ray floret: profile in cross section	Fleur ligulée externe : profil en section transversale	Äußere Zungenblüte: Profil im Querschnitt	Lígula exterior: perfil en sección transversal	
PQ	(c)	concave	concave	konkav	cóncavo	1
	(e)	flat	plat	flach	plano	2
		convex	convexe	konvex	convexo	3
		oblong	oblong	breitrund	oblongo	4
		circular	circulaire	kreisförmig	circular	5
		rhombic	losangique	rhombisch	rómbico	6
25.	VG	Outer ray floret: main color of inner side	Fleur ligulée externe : couleur principale de la face interne	Äußere Zungenblüte: Hauptfarbe der Innenseite	Lígula exterior: color principal de la cara interna	
PQ	(c) (e) (g)	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)	
26.	VG	Outer ray floret: secondary color of inner side	Fleur ligulée externe : couleur secondaire de la face interne	Äußere Zungenblüte: Sekundärfarbe der Innenseite	Lígula exterior: color secundario de la cara interna	
PQ	(c) (e) (g)	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)	
27.	VG	Outer ray floret: distribution of secondary color of inner side	Fleur ligulée externe : distribution de la couleur secondaire de la face interne	Äußere Zungenblüte: Verteilung der Sekundärfarbe der Innenseite	Lígula exterior: distribución del color secundario de la cara interna	
PQ	(c)	basal part	partie basale	basaler Teil	en la parte basal	1
	(e)	apical part	partie apicale	apikaler Teil	en la parte apical	2
	(g)	on margin	au bord	am Rand	en el borde	3
		central bar	barre centrale	Mittelstreifen	franja central	4
28.	VG	Outer ray floret: main color of outer side	Fleur ligulée externe : couleur principale de la face externe	Äußere Zungenblüte: Hauptfarbe der Außenseite	Lígula exterior: color principal de la cara externa	
PQ	(c) (e) (g)	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)	

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
29. (*) (+)	VG <u>Only varieties with:</u> <u>flower head: type:</u> <u>double:</u> Inner ray floret: shape	<u>Seulement variétés</u> <u>avec capitule : type :</u> <u>double :</u> Fleur ligulée interne : forme	<u>Nur Sorten mit</u> <u>Blütenkopf: Typ:</u> <u>gefüllt:</u> Innere Zungenblüte: Form	<u>Solo las variedades con:</u> <u>capítulo: tipo: doble:</u> Ligula interior: forma		
PQ	(c) ligulate	ligulée	zungenförmig	ligulada		1
	(f) spatulate	spatulée	spatelförmig	espatulada		2
	tubular	tubulaire	röhrenförmig	tubular		3
30. (*) (+)	VG <u>Only varieties with:</u> <u>flower head: type:</u> <u>double:</u> Inner ray floret: curvature of longitudinal axis	<u>Seulement variétés</u> <u>avec capitule : type :</u> <u>double :</u> Fleur ligulée interne : courbure de l'axe longitudinal	<u>Nur Sorten mit</u> <u>Blütenkopf: Typ:</u> <u>gefüllt:</u> Innere Zungenblüte: Biegung der Längsachse	<u>Solo las variedades con:</u> <u>capítulo: tipo: doble:</u> Ligula interior: curvatura del eje longitudinal		
QN	(c) incurved	incurvé	aufgebogen	incurvado		1
	(f) straight	droit	gerade	recto		2
	reflexed	réfléchi	zurückgebogen	reflexo		3
31. (*) (+)	VG <u>Only varieties with:</u> <u>flower head: type:</u> <u>double:</u> Inner ray floret: profile in cross section	<u>Seulement variétés</u> <u>avec capitule : type :</u> <u>double:</u> Fleur ligulée interne : profil en section transversale	<u>Nur Sorten mit</u> <u>Blütenkopf: Typ:</u> <u>gefüllt:</u> Innere Zungenblüte: Profil im Querschnitt	<u>Solo las variedades con</u> <u>tipo de capítulo: tipo:</u> <u>doble:</u> Lígula interior: perfil en sección transversal		
PQ	(c) concave	concave	konkav	cóncavo		1
	(f) flat	plat	flach	plano		2
	convex	convexe	konvex	convexo		3
	oblong	oblong	rechteckig	oblongo		4
	circular	circulaire	kreisförmig	circular		5
	rhombic	losangique	rhombisch	rómbico		6
32. (*)	VG <u>Only varieties with:</u> <u>flower head: type:</u> <u>double:</u> Inner ray floret: main color of inner side	<u>Seulement variétés</u> <u>avec capitule : type :</u> <u>double :</u> Fleur ligulée interne : couleur principale de la face interne	<u>Nur Sorten mit</u> <u>Blütenkopf: Typ:</u> <u>gefüllt:</u> Innere Zungenblüte: Hauptfarbe der Innenseite	<u>Solo las variedades con:</u> <u>capítulo: tipo: doble:</u> Ligula interior: color principal de la cara interna		
PQ	(c) RHS Colour Chart (f) (indicate reference (g) number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)		
33. (*)	VG <u>Only varieties with:</u> <u>flower head: type:</u> <u>double:</u> Inner ray floret: secondary color of inner side	<u>Seulement variétés</u> <u>avec capitule : type :</u> <u>double :</u> Fleur ligulée interne : couleur secondaire de la face interne	<u>Nur Sorten mit</u> <u>Blütenkopf: Typ:</u> <u>gefüllt:</u> Innere Zungenblüte: Sekundärfarbe der Innenseite	<u>Solo las variedades con:</u> <u>capítulo: tipo: doble:</u> Ligula interior: color secundario de la cara interna		
PQ	(c) RHS Colour Chart (f) (indicate reference (g) number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)		

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
34. (+)	VG <u>Only varieties with: flower head: type: double: Inner ray floret: distribution of secondary color of inner side</u>	<u>Seulement variétés avec capitule: type: double: Fleur ligulée interne : distribution de la couleur secondaire de la face interne</u>	<u>Nur Sorten mit Blütenkopf: Typ: gefüllt: Innere Zungenblüte: Verteilung der Sekundärfarbe der Innenseite</u>	Solo las variedades con: capítulo: tipo: doble: Lígula interior: distribución del color secundario de la cara interna		
PQ	(c) basal part	partie basale	basaler Teil	en la parte basal		1
	(f) apical part	partie apicale	apikaler Teil	en la parte apical		2
	(g) on margin	au bord	am Rand	en el borde		3
	central bar	barre centrale	Mittelstreifen	franja central		4
35.	VG <u>Only varieties with: flower head: type: double: Inner ray floret: main color of outer side</u>	<u>Seulement variétés avec capitule: type: double: Fleur ligulée interne : couleur principale de la face externe</u>	<u>Nur Sorten mit Blütenkopf: Typ: gefüllt: Innere Zungenblüte: Hauptfarbe der Außenseite</u>	Solo las variedades con: capítulo: tipo: doble: Lígula interior: color principal de la cara externa		
PQ	(c) RHS Colour Chart (f) (indicate reference (g) number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)		
36. (*) (+)	VG Disc: type	Disque: type	Scheibe: Typ	Disc: tipo		
QL	(c) daisy	daisy	Margarite	margarita	Siena Pink	1
	(d) anemone	anemone	Anemone	anémona	Chikuma Siro	2
37. (*) (+)	VG/ MS Disc: diameter	Disque : diamètre	Scheibe: Durchmesser	Disco: diámetro		
QN	(c) very small	très petit	sehr klein	muy pequeño		1
	(d) small	petit	klein	pequeño	Stellar Carmine	2
	medium	moyen	mittel	mediano	Umenomai	3
	large	grand	groß	grande	Kairyo Kurenai	4
	very large	très grand	sehr groß	muy grande		5
38.	VG Disc: color of central part	Disque : couleur de la partie centrale	Farbe des Mittelteils	Disco: color de la parte central		
PQ	(c) white	blanc	weiß	blanco		1
	(d) yellow	jaune	gelb	amarillo	Stellar Blue	2
	yellowish green	vert jaunâtre	gelblich grün	verde amarillento	Petit Fancy Pink	3
	green	vert	grün	verde		4
39. (+)	VG Disc floret: color	Fleuron discal : couleur	Scheibenblüte: Farbe	Flósculo del disco: color		
PQ	(c) RHS Colour Chart (d) (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)		

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
40. (*) (+)	VG/MS	Involucre: diameter	Involucre : diamètre	Hülle: Durchmesser	Involucro: diámetro	
QN	(c)	small	petit	klein	pequeño	Sanhana Purple 3
		medium	moyen	mittel	mediano	Stellar Carmine 5
		large	grand	groß	grande	Chikuma Light Pink 7
41. (+)	VG/MS	Involucre: size in relation to flower head diameter	Involucre : taille par rapport au diamètre du capitule	Hülle: Größe im Verhältnis zum Durchmesser des Blütenkopfs	Involucro: tamaño en relación con el diámetro del capítulo	
QN	(c)	smaller	plus petit	kleiner	más pequeño	Taiyo 1
		same	égal	gleich groß	igual	Fukuhogyoku 2
		larger	plus grand	größer	más grande	Chikuma Light Pink 3
42. (+)	VG/MG	Time of beginning of flowering	Époque de début de la floraison	Zeitpunkt des Blühbeginns	Época de comienzo de la floración	
QN		early	précoce	früh	temprana	Athena Scarlet 3
		medium	moyenne	mittel	media	Stellar Blue 5
		late	tardive	spät	tardía	Chikuma Light Pink 7

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

Unless otherwise indicated below, all characteristics should be recorded at the time of full flowering. Characteristics containing the following key in the second column of the Table of Characteristics should be examined as indicated below:

- (a) Observations on the primary lateral shoots should be made on the longest primary lateral shoots.
- (b) Observations on the petiole and the leaf blade should be made on the upper side of fully developed typical leaves of the longest primary lateral shoots.
- (c) Observations on the flower head should be made on the typical terminal flower heads.
- (d) Observations on the disc should be made when the anthers in outer 3-4 rows of the disc floret have dehisced.
- (e) The ray florets in the outermost row should be observed.
- (f) The inner ray florets should be observed when they are markedly different from in shape or color of the ray florets in the outer most row.
- (g) The main color is the color with the largest surface area, the secondary color is the color with the second largest surface area. In cases where the areas of the main and secondary color are too similar to reliably decide which color has the largest area, the darkest color is considered to be the main color.

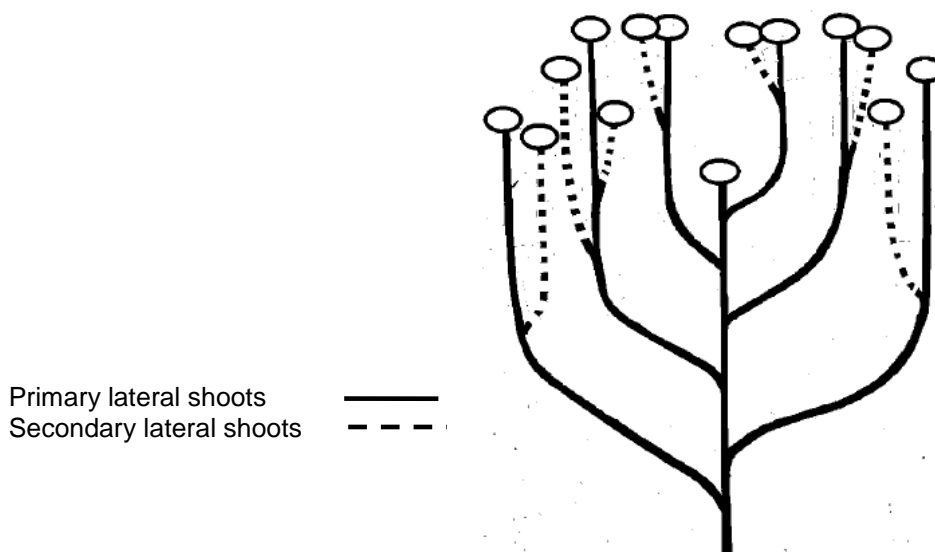
8.2 *Explanations for individual characteristics*

Ad. 1: Plant: height

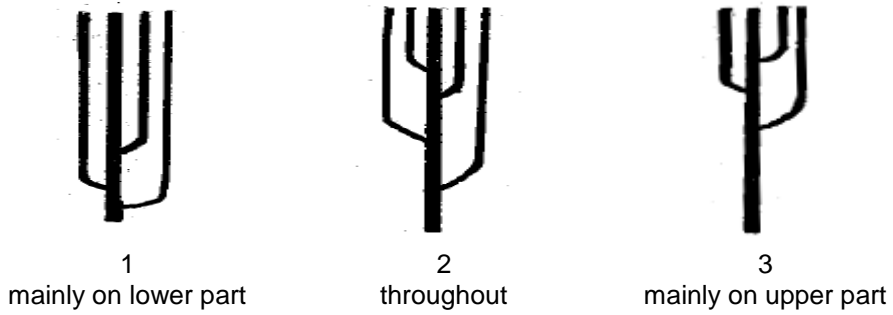
Plant height should be observed from the ground to the top of the plant, including inflorescence.

Ad. 3: Plant: number of primary lateral shoots

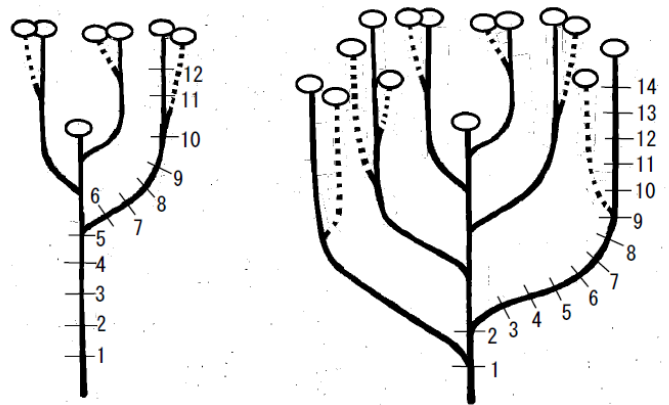
Ad. 4: Plant: number of secondary lateral shoots



Ad. 5: Plant: distribution of primary lateral shoots

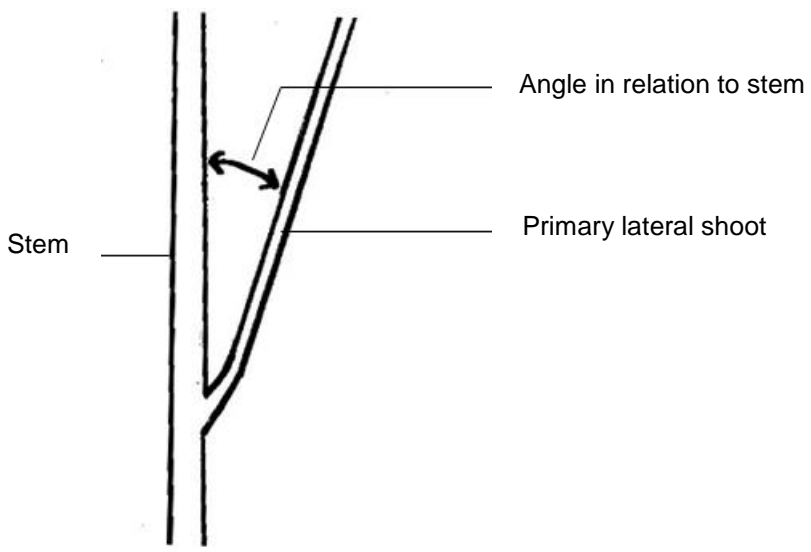


Ad. 6: Stem: number of nodes



Number of nodes should be observed from the ground up to the top of the longest primary lateral shoots.

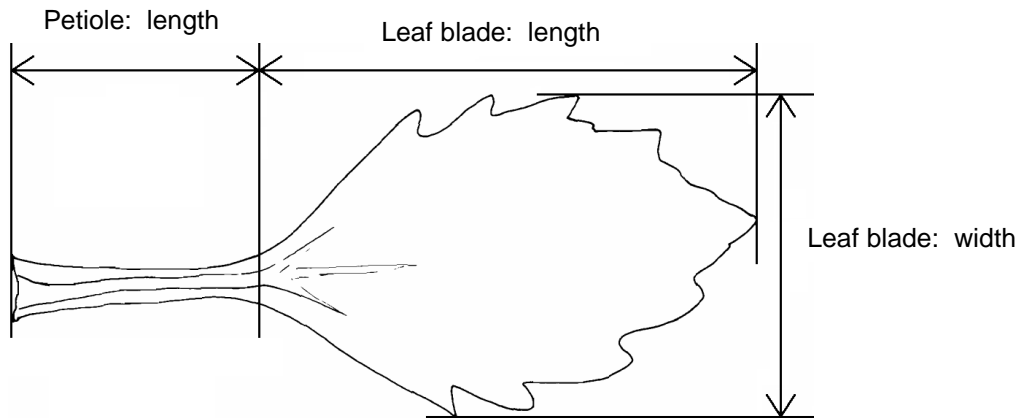
Ad. 9: Primary lateral shoot: angle in relation to stem



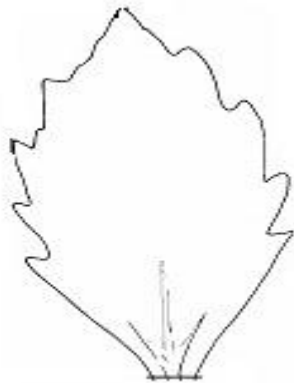
Ad. 10: Petiole: length

Ad. 11: Leaf blade: length

Ad. 12: Leaf blade: width



Ad.13: Leaf blade: ratio length/width



3
low



5
medium



7
high

Ad. 15: Flower head: type



1
without ray floret



2
single



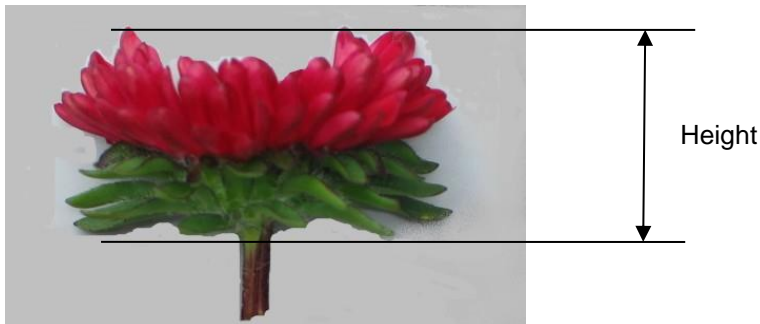
3
double

1: without ray floret flower heads with no ray floret.

2: single flower heads with one row of ray florets.

3: double flower heads with more than one row of ray florets.

Ad.18: Flower head: height



Ad. 21: Outer ray floret : ratio length/ width



3
low



5
medium



7
high

Ad. 22: Outer ray floret: shape

Ad. 29: Only varieties with flower head: type: double: Inner ray floret: shape



1
ligulate



2
spatulate



3
tubular

Ad. 23: Outer ray floret: curvature of longitudinal axis

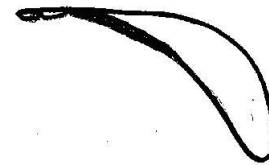
Ad. 30: Only varieties with flower head: type: double: Inner ray floret: curvature of longitudinal axis



1
incurved



2
straight



3
reflexed

Ad. 24: Outer ray floret: profile in cross section

Ad. 31: Only varieties with flower head: type: double: Inner ray floret: profile in cross section

Observations should be made at the widest part of the ray florets.



1
concave



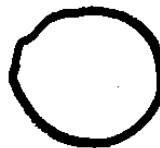
2
flat



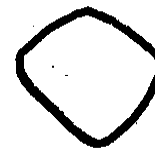
3
convex



4
oblong



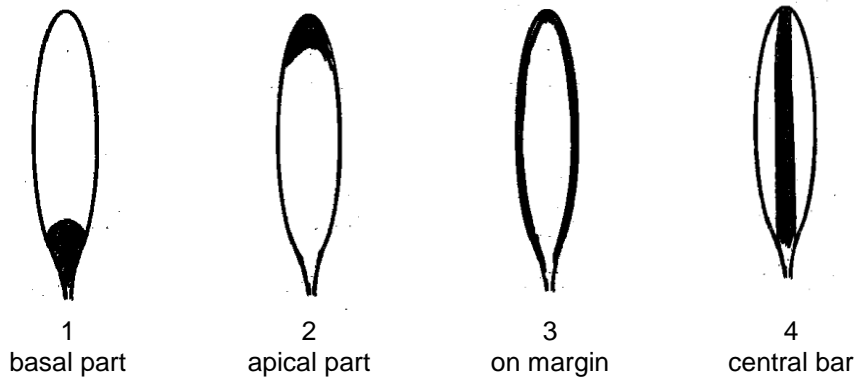
5
circular



6
rhombic

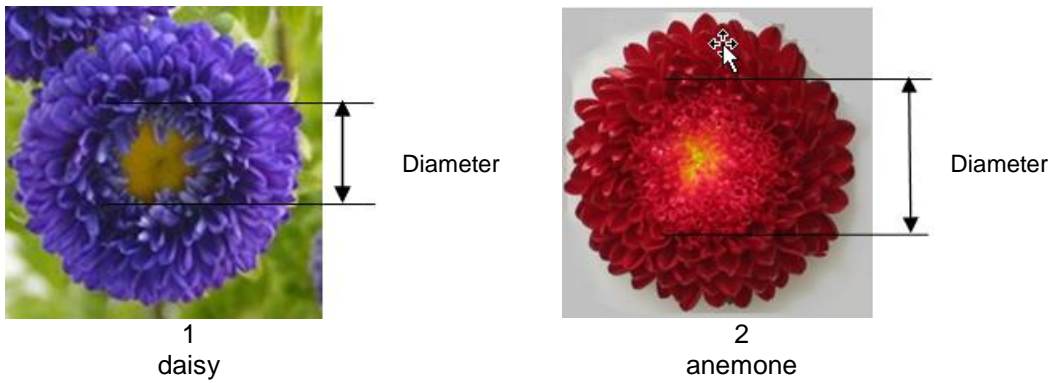
Ad. 27: Outer ray floret: distribution of secondary color of inner side

Ad. 34: Only varieties with flower head: type: double: Inner ray floret: distribution of secondary color of inner side



Ad. 36: Disc: type

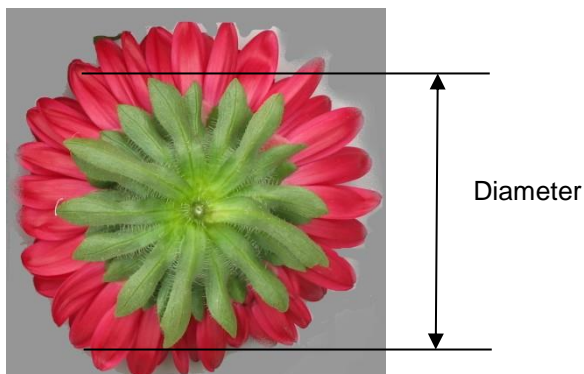
Ad. 37: Disc: diameter



Ad. 39: Disc floret: color

Observations should be made on outer three/four rows of disc florets.

Ad. 40: Involucre: diameter



Ad. 41: Involucre: size in relation to flower head diameter



1
smaller



2
same



3
larger

Ad. 42: Time of beginning of flowering

Time of beginning of flowering is when the first flower head has fully opened on 50% of the plants.

9. Literature

Bailey, L. H., Bailey, E. Z.: 1976: Hortus Third, A Concise Dictionary of Plants Cultivated in the United States and Canada. MacMillan Publishing Co. Inc., New York, London, pp. 203-204

Fryxell, P. A., 1957: Mode of Reproduction of Higher Plants, New York Botanical Garden, The Botanical Review, vol. XXIII, no.3, pp.135-233

Huxley, A. (ed.), Griffiths, M. (ed.), Levy, M. (ed.), 1999: The Royal Horticultural Society Dictionary of Gardening. Volume 1.A to C, McMillan Reference Ltd. London, GB, p 467

Inoue, Y, et al., 1982: Encyclopedia of Horticulture. Seibundo shinkosha. Tokyo, JP, vol.3, pp.17-18

Tsukamoto, Y., 1994: The Grand Dictionary of Horticulture, Compact version. Shogakukan. Tokyo, JP, pp. 545-546

Tsurushima, H., 1983: Handbook of Floriculture, Yokendo, Tokyo, JP, pp 308-313

Yashiro, Y., 2002: The Grand Dictionary of Flower Horticulture Volume 11, The Rural Culture Association, Tokyo, JP, pp. 537 to 541

Wit, F. 1937: Contributions to the Genetics of the China Aster, Genetica, Springer, vol.19, no.1-3, pp1-104

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights		
1. Subject of the Technical Questionnaire		
1.1 Botanical name	<input type="text" value="Callistephus chinensis (L.) Nees"/>	
1.2 Common name	<input type="text" value="China Aster"/>	
2. Applicant		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	
Fax No.	<input type="text"/>	
E-mail address	<input type="text"/>	
Breeder (if different from applicant)	<input type="text"/>	
3. Proposed denomination and breeder's reference		
Proposed denomination (if available)	<input type="text"/>	
Breeder's reference	<input type="text"/>	

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

#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)

(.....) 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:
-------------------------	-----------------	-------------------

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

- (a) Self-pollination []
- (b) Cross-pollination
 - (i) population []
 - (ii) synthetic variety []
- (c) Hybrid []
- (d) Other []
(please provide details)

[]

4.2.2 Vegetatively propagated varieties

- (a) cuttings []
- (b) *in vitro* propagation []
- (c) 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 Plant: height (1)		
very short		1[]
very short to short		2[]
short	Gyokurei Rose	3[]
short to medium		4[]
medium	Petit White	5[]
medium to tall		6[]
tall	Sanhana Purple	7[]
tall to very tall		8[]
very tall		9[]
5.2 Flower head: type (15)		
without ray floret	Hulk	1[]
single	Siena Pink	2[]
double	Miss Europe, Stellar Blue	3[]
5.3 Flower head: diameter (17)		
very small		1[]
very small to small		2[]
small	Stellar Red	3[]
small to medium		4[]
medium	Fukunokagayaki	5[]
medium to large		6[]
large	Koma Pink	7[]
large to very large		8[]
very large		9[]

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

Characteristics	Example Varieties	Note
5.4 Outer ray floret: shape (22)		
ligulate		1[]
spatulate		2[]
tubular		3[]
5.5i Outer ray floret: main color of inner side (25)		
RHS Colour Chart (indicate reference number)	
5.5ii Outer ray floret: main color of inner side (25)		
white		1[]
yellow		2[]
orange		3[]
pink		4[]
red		5[]
purple		6[]
violet		7[]
5.6 Disc: type (36)		
daisy	Siena Pink	1[]
anemone	Chikuma Siro	2[]

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 the characteristic(s) for your candidate variety
<i>Example</i>	<i>Flower head: type</i>	<i>single</i>	<i>double</i>

Comments:

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

#7. Additional information which may help in the examination of the variety

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

Yes [] No []

(If yes, please provide details)

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

Yes [] No []

(If yes, please provide details)

7.3 Other information

7.3.1 Main use

- (a) garden plant []
 - (b) *pot plant* []
 - (c) cut-flower []
 - (c) other []
- (please provide details)

7.3.2 A representative color image of the variety should accompany the Technical Questionnaire.

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.

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

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".

.....

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]