

INTERNATIONAL UNION
FOR THE PROTECTION
OF NEW VARIETIES OF
PLANTS

UNION INTERNATIONALE
POUR LA PROTECTION
DES OBTENTIONS
VÉGÉTALES

INTERNATIONALER
VERBAND ZUM SCHUTZ
VON PFLANZEN-
ZÜCHTUNGEN

UNIÓN INTERNACIONAL
PARA LA PROTECCIÓN
DE LAS OBTENCIÓNES
VEGETALES

GUIDELINES**FOR THE CONDUCT OF TESTS****FOR DISTINCTNESS, UNIFORMITY AND STABILITY****FIRELILY***(Cyrtanthus Ait.)***GENEVA
1996**

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These Guidelines should be read in conjunction with document TG/1/2, which contains explanatory notes on the general principles on which the Guidelines have been established.

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I. Subject of these Guidelines

These Test Guidelines apply to all vegetatively propagated varieties of *Cyrtanthus* Ait. of the family Amaryllidaceae.

II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the plant material required for testing the variety is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must make sure that all customs formalities are complied with. As a minimum, the following quantity of plant material is recommended:

20 bulbs of flowering size.

2. The plant material supplied should be visibly healthy, not lacking in vigor or affected by any important pests or diseases. It should preferably not be obtained from *in vitro* propagation.

3. The plant material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of Tests

1. A test should normally be conducted for one growing period. If distinctness and/or uniformity cannot be sufficiently established in one growing period, the test should be extended for a second growing period.

2. The tests should normally be conducted at one place. If any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.

3. The tests should be carried out in the greenhouse under the following growing conditions:

Planting time: March to April (in southern hemisphere). If flowering forcing is practiced, the planting time may change.

Substrate: A well-drained sandy soil with humus.

Planting depth: The different species require different planting depths but all varieties to be compared should be planted at the same depth.

Planting density: Five bulbs per pot of 12 cm in diameter.

Fertilization: Fertilizer low in nitrogen, high in potassium.

Irrigation: Growing substrate should dry out completely between watering. Irrigation should be reduced when flowers die back and terminated when leaves begin to yellow.

Bulb lifting: Once planted the bulbs should be left undisturbed up to the end of the test.

The size of the plots should be such that plants or parts of plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the growing period. Each test should include a total of 20 plants. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Additional tests for special purposes may be established.

IV. Methods and Observations

1. All observations should be made on 20 plants or 20 typical parts, one from each of 20 plants.

2. For the assessment of uniformity a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 20 plants, the maximum number of off-types allowed would be 1.

3. All measurements of the length of the peduncle should be taken from soil level to the base of the bract.

4. All observations on the flower should be made on the most recently fully opened flower on the inflorescence before fading of color.

5. Flowering is considered to begin when the first flower on the inflorescence has opened.

6. 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 6,500 and should fall within the tolerances set out in British Standard 950, Part I. These determinations should be made with the plant part placed against a white background.

V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.

2. It is recommended that the competent authorities use the following characteristics for grouping varieties:

- (a) Inflorescence: number of flowers (characteristic 14)
- (b) Flower: shape (characteristic 19)
- (c) Perianth tube: stripes (inner side) (characteristic 24)
- (d) Perianth tube: main color (outer side) (characteristic 26)
- (e) Time of beginning of flowering (characteristic 39).

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.

2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of expression for each characteristic.

3. So far only few varieties exist; therefore mainly species and only few example varieties are indicated in the Table of Characteristics. Names of further example varieties will be indicated as soon as more varieties become available.

4. Legend:

(*) Characteristics that should be used on all varieties in every growing period over which examinations are made and always be included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.

(+) See Explanations on the Table of Characteristics in chapter VIII.

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

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades	Note/ Nota
1. Leaf: attitude	Feuille: port	Blatt: Haltung	Hoja: porte		
erect	dressé	aufrecht	erecto	C. obliquus	1
semi-erect	demi-dressé	halbaufrecht	semierecto		3
horizontal	étalé	waagerecht	rastrero		5
2. Leaf: length	Feuille: longueur	Blatt: Länge	Hoja: longitud		
short	courte	kurz	corta	C. flavus	3
medium	moyenne	mittel	media	C. elatus	5
long	longue	lang	larga	C. huttonii	7
3. Leaf: width	Feuille: largeur	Blatt: Breite	Hoja: anchura		
narrow	étroite	schmal	estrecha	C. contractus	3
medium	moyenne	mittel	media	C. sanguineus	5
broad	large	breit	ancha	C. obliquus	7
4. Leaf: color	Feuille: couleur	Blatt: Farbe	Hoja: color		
yellow green	vert jaune	gelbgrün	verde amarillo		1
medium green	vert moyen	mittelgrün	verde medio	C. elatus	2
blue green	vert bleu	blaugrün	verde azulado		3
5. Leaf: torsion	Feuille: torsion	Blatt: Drehung	Hoja: torsión		
absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	C. elatus	1
weak	faible	gering	débil		2
strong	forte	stark	fuerte		3
6. Leaf: undulation of margin	Feuille: ondulation du bord	Blatt: Wellung des Randes	Hoja: ondulación del borde		
absent	absente	fehlend	ausente		1
present	présente	vorhanden	presente		9

English	français	deutsch	español	Example Varieties	Note/ Nota
				Exemples Beispielssorten Variedades ejemplos	
7.	Leaf: degree of undulation of margin	Feuille: degré d'ondulation du bord	Blatt: Stärke der Wellung des Randes	Hoja: grado de ondulación del borde	
	weak	faible	gering	débil	3
	medium	moyenne	mittel	media	5
	strong	forte	stark	fuerte	7
8.	Peduncle: length	Pédoncule: longueur	Blütenstandsstiellänge	Pedúnculo: longitud	
(+)	short	courte	kurz	corto	C. breviflorus
	medium	moyenne	mittel	medio	C. angustifolius
	long	longue	lang	largo	C. falcatus, C. obliquus
9.	Peduncle: thickness	Pédoncule: épaisseur	Blütenstandsstiellänge	Pedúnculo: espesor	
(+)	thin	mince	dünn	delgado	3
	medium	moyen	mittel	medio	5
	thick	épais	dick	grueso	7
10.	Peduncle: anthocyanin coloration	Pédoncule: pigmentation anthocyane	Blütenstandsstiellänge	Pedúnculo: pigmentación antociánica	
(+)	absent	absente	fehlend	ausente	1
	present	présente	vorhanden	presente	9
11.	Peduncle: hue of anthocyanin coloration	Pédoncule: teinte de la pigmentation anthocyane	Blütenstandsstiellänge	Pedúnculo: tono de la pigmentación antociánica	
(+)	red brown	brun rouge	rotbraun	marrón rojizo	C. mackenii
	purple	pourpre	purpur	púrpura	C. falcatus

	English	français	deutsch	español	Example Varieties	Note/ Nota
					Exemples Beispielssorten Variedades ejemplos	
12.	Peduncle: shape in cross section	Pédoncule: forme en section transversale	Blütenstandsstiell: Form im Querschnitt	Pedúnculo: forma en sección transversal		
	elliptic	elliptique	elliptisch	elíptica		1
	broad elliptic	elliptique large	breitelliptisch	elíptica ancha		2
	circular	circulaire	rund	circular		3
13.	(+) Inflorescence: length of bract	Inflorescence: largeur de la bractée	Blütenstand: Länge des Deckblatts	Inflorescencia: longitud de la bráctea		
	short	courte	kurz	corta		3
	medium	moyenne	mittel	media		5
	long	longue	lang	larga		7
14.	(*) Inflorescence: number of flowers	Inflorescence: nombre de fleurs	Blütenstand: Anzahl Blüten	Inflorescencia: número de flores		
	few	petit	gering	bajo	C. galpinii, C. sanguineus	3
	medium	moyen	mittel	medio	C. mackenii	5
	many	grand	groß	alto	C. obliquus	7
15.	(+) Flower: length of pedicel	Fleur: longueur du pédicelle	Blüte: Länge des Blütenstiels	Flor: longitud del pedicelito		
	short	court	kurz	corto		3
	medium	moyen	mittel	medio		5
	long	long	lang	alto		7
16.	(*) Flower: attitude	Fleur: port	Blüte: Haltung	Flor: porte		
	erect	dressé	aufrecht	erecta	C. montanus	1
	semi-erect	demi-dressé	halbaufrecht	semierecta		3
	horizontal	horizontal	waagrecht	horizontal	C. ventricosus	5
	semi-pendulous	demi-retombant	halbhängend	semicolgante		7
	pendulous	retombant	hängend	colgante	C. obliquus	9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplos	Note/ Nota
17. Flower: length (*) (+)	Fleur: longueur	Blüte: Länge	Flor: longitud		
short	courte	kurz	corta	C. obrienii	3
medium	moyenne	mittel	media	C. mackenii	5
long	longue	lang	larga	C. elatus, C. obliquus	7
18. Flower: diameter (*) (+)	Fleur: diamètre	Blüte: Durchmesser	Flor: diámetro		
small	petit	klein	pequeño	C. parviflorus	3
medium	moyen	mittel	medio		5
large	grand	groß	grande	C. elatus	7
19. Flower: shape (*) (+)	Fleur: forme	Blüte: Form	Flor: forma		
tubular	tubuleuse	röhrenförmig	tubular	C. carneus	1
narrow funnel-shaped	en entonnoir étroit	schmal trichterförmig	en forma de embudo estrecho		2
broad funnel-shaped	en entonnoir large	breit trichterförmig	en forma de embudo ancho		3
narrow campanulate	campanulée étroite	schmal glockenförmig	acampanada estrecha		4
broad campanulate	campanulée large	breit glockenförmig	acampanada ancha	C. galpinii	5
20. Perianth tube: length (*)	Tube du périanthe: longueur	Blütenröhre: Länge	Tubo del perianto: longitud		
short	court	kurz	corto	C. breviflorus	3
medium	moyen	mittel	medio	C. mackenii	5
long	long	lang	largo	C. carneus	7

	English	français	deutsch	español	Example Varieties	
	(*)				Exemples	Note/
	(+)				Beispielssorten	Nota
					Variedades ejemplo	
21.	Perianth tube: (*) diameter at throat (+)	Tube du périanthe: diamètre à la gorge	Blütenröhre: Durchmesser am Schlund	Tubo del periantio: diámetro en la garganta		
	small	petit	klein	pequeño		3
	medium	moyen	mittel	medio		5
	large	grand	groß	grande		7
22.	Perianth tube: (*) diameter at widest part (if not throat) (+)	Tube du périanthe: diamètre au point le plus large (si pas de gorge)	Blütenröhre: Durchmesser an der weitester Stelle (sofern nicht der Schlund)	Tubo del periantio: diámetro en la parte más ancha (si no es la garganta)		
	small	petit	klein	pequeño		3
	medium	moyen	mittel	medio		5
	large	grand	groß	grande		7
23.	Perianth tube: (*) main color <u>inner</u> side)	Tube du périanthe: couleur principale (face <u>interne</u>)	Blütenröhre: Hauptfarbe (Innenseite)	Tubo del periantio: color principal (cara <u>interna</u>)		
	RHS Colour Chart (indicate reference number)	Code RHS des cou- leurs (indiquer le nu- méro de référence)	RHS-Farbkar- te (Nummer angeben)	Carta de colores RHS (indicar número de referencia)		
24.	Perianth tube: (*) stripes (inner side) (+)	Tube du périanthe: stries (face interne)	Blütenröhre: Strei- fen (Innenseite)	Tubo del periantio: estrías (cara inter- na)		
	absent	absentes	fehlend	ausentes	C. breviflorus	1
	present	présentes	vorhanden	presentes	C. striatus	9

English	français	deutsch	español	Example Varieties	Note/ Nota
				Exemples Beispielssorten Variedades	
25. Perianth tube: color of stripes (inner side)	Tube du périanthe: couleur des stries (face interne)	Blütenröhre: Farbe der Streifen (Innenseite)	Tubo del periantio: color de las estrías (cara interna)		
whitish	blanchâtres	weißlich	blanquecino	1	
greenish	verdâtres	grünlich	verdosado	2	
yellow	jaunes	gelb	amarillo	3	
pink	roses	rosa	rosa	4	
red	rouges	rot	rojo	5	
brownish	brunâtres	bräunlich	marronáceo	6	
26. Perianth tube: <u>main color (outer side)</u>	Tube du périanthe: couleur principale (face externe)	Blütenröhre: Hauptfarbe (Außenseite)	Tubo del periantio: color principal (cara externa)		
RHS Colour Chart (indicate reference number)	Code RHS des cou- leurs (indiquer le nu- méro de référence)	RHS-Farbkar- te (Nummer angeben)	Carta de colores RHS (indicar el número de referencia)		
27. Perianth lobe: <u>length</u>	Lobe du périanthe: longueur	Kronzipfel: Länge	Lóbulo del perian- tio: longitud		
short	court	kurz	corto	C. stenanthus	3
medium	moyen	mittel	medio	C. contractus	5
long	long	lang	largo	C. montanus	7
28. Perianth lobe: <u>width</u>	Lobe du périanthe: largeur	Kronzipfel: Breite	Lóbulo del perian- tio: anchura		
narrow	étroit	schmal	estrecho	C. attenuatus	3
medium	moyen	mittel	medio		5
broad	large	breit	ancho	C. elatus	7
29. Perianth lobe: shape of apex	Lobe du périanthe: forme du sommet	Kronzipfel: Form der Spitze	Lóbulo del perian- tio: forma del ápice		
acute	aigu	spitz	agudo		1
obtuse	obtus	stumpf	obtuso		2
rounded	arrondi	rundlich	redondeado		3

	English	français	deutsch	español	Example Varieties	Note/ Nota
					Exemples Beispielssorten Variedades	
30.	Perianth lobe: curvature	Lobe du périanthe: courbure	Kronzipfel: Krümmung	Lóbulo del perianto: curvatura		
(*)						
	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	C. obliquus	1
	weak	faible	gering	débil	C. striatus	3
	medium	moyenne	mittel	media	C. herrei	5
	strong	forte	stark	fuerte	C. contractus	7
	very strong	très forte	sehr stark	muy fuerte	C. galpinii	9
31.	Perianth lobe: main color <u>(inner side)</u>	Lobe du périanthe: couleur principale <u>(face interne)</u>	Kronzipfel: Hauptfarbe <u>(Innenseite)</u>	Lóbulo del perianto: color principal <u>(cara interna)</u>		
(*)						
	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben) mero de réference)	Carta de colores RHS (indicar el número de referencia)		
	
32.	Perianth lobe: color of tip relative to main color	Lobe du périanthe: couleur du sommet par rapport à la couleur principale	Kronzipfel: Farbe der Spitze in Vergleich zur Hauptfarbe	Lóbulo del perianto: color del extremo apical en relación al color principal		
	same	même couleur	gleichfarbig	igual	C. galpinii	1
	different	diférente	nicht gleichfarbig	diferente	C. herrei	2
33.	Perianth lobe: color of tip if different from main color <u>(inner side)</u>	Lobe du périanthe: couleur du sommet si différente de la couleur principale <u>(face interne)</u>	Kronzipfel: Farbe der Spitze, sofern nicht gleichfarbig mit Hauptfarbe <u>(Innenseite)</u>	Lóbulo del perianto: color del extremo apical si difiere del color principal <u>(cara interna)</u>		
	green	vert	grün	verde	C. herrei	1
	yellow	jaune	gelb	amarillo	C. junodii	2
	pink	rose	rosa	rosa		3
	red	rouge	rot	rojo		4

	English	français	deutsch	español	Example Varieties	Note/ Nota
					Exemples Beispielssorten Variedades ejemplos	
34.	Perianth lobe: main color (<u>outer side</u>)	Lobe du périanthe: couleur principale (<u>face externe</u>)	Kronzipfel: Hauptfarbe (<u>Außenseite</u>)	Lóbulo del perianto: color principal (<u>cara externa</u>)		
	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben) mero de réferencia)		Carta de colores RHS (indicar el número de referencia)	
35.	Stamen: length	Étamme: longueur	Staubfaden: Länge	Estambre: longitud		
	short	courte	kurz	corto		3
	medium	moyenne	mittel	medio		5
	long	longue	lang	largo	C. montanus	7
36.	Style: main color	Style: couleur principale	Griffel: Hauptfarbe	Estilo: color principal		
	white	blanc	weiß	blanco		1
	green	vert	grün	verde		2
	yellow	jaune	gelb	amarillo		3
	pink	rose	rosa	rosa		4
	red	rouge	rot	rojo		5
37.	Plant: appearance of leaves in relation to flowering	Plante: époque d'apparition des feuilles par rapport à la floraison	Pflanze: Erscheinen der Blätter im Verhältnis zu den Blüten	Planta: aparición de las hojas con respecto a las flores		
(*)						
	before	avant	vorher	antes	C. obrienii	1
	during	pendant	gleichzeitig	durante		2
	after	après	später	después	C. galpinii	3
38.	Plant: persistence of leaves	Plante: persistance des feuilles	Pflanze: Persistenz der Blätter	Planta: persistencia de las hojas		
	weak	faible	gering	débil	C. contractus	3
	medium	moyenne	mittel	media	C. angustifolius	5
	strong	forte	stark	fuerte	C. obrienii	7

English	français	deutsch	español	Example Varieties	Note/ Nota
				Exemples Beispielssorten Variedades	
39. (*) Time of beginning of flowering	Époque du début de floraison	Zeitpunkt des Blühbeginns	Fecha del inicio de la floración		
very early	très précoce	sehr früh	muy temprana	C. mackenii	1
early	précoce	früh	temprana	C. parviflorus	3
medium	moyenne	mittel	media	C. angustifolius	5
late	tardive	spät	tardía	C. sanguineus	7
very late	très tardive	sehr spät	muy tardía		9

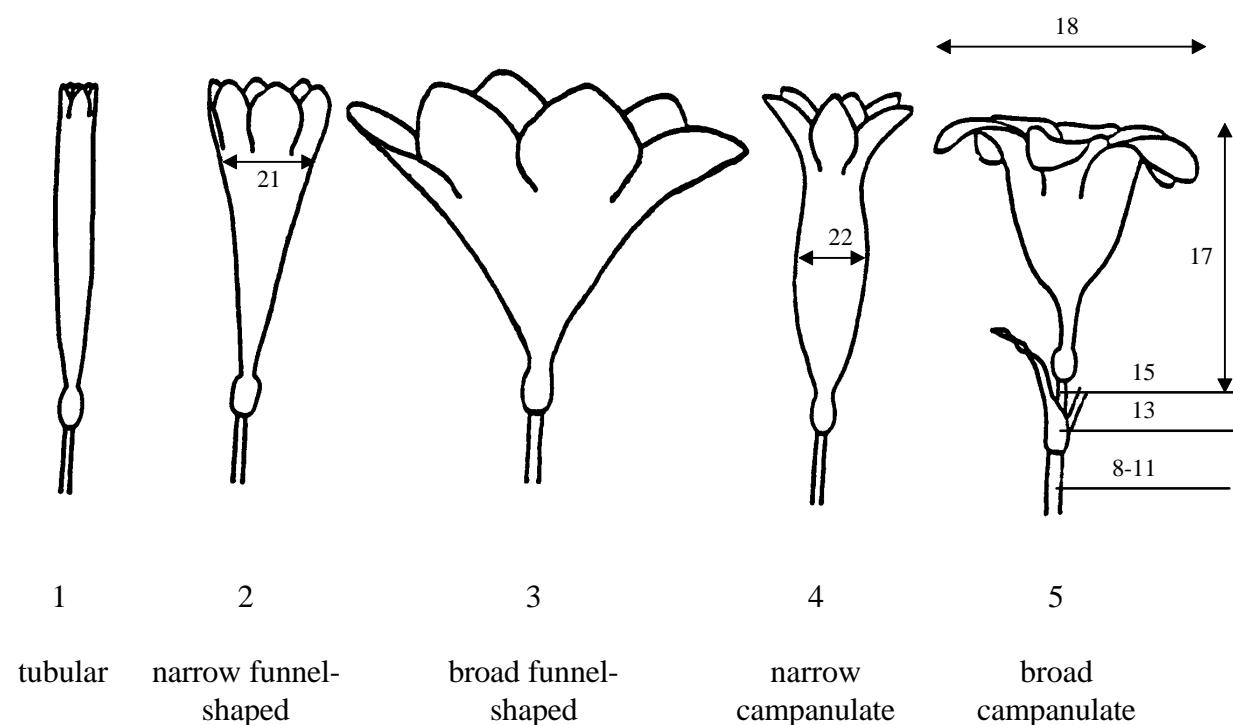
VIII. Explanation on the Table of Characteristics

Ad. 8-11, 13, 15, 17, 18, 19, 21, 22, 24

Peduncle: length (8), thickness (9), anthocyanin coloration (10), hue of anthocyanin coloration (11)

Inflorescence: length of bract (13)

Flower: length of pedicel (15), length (17), diameter (18), shape (19)



Perianth tube: diameter at throat (21), diameter at widest part (if not throat) (22), stripes (inner side) (24)

IX. Literature

- Reid, C., Dyer, R.A., 1984: "A review of the South African species of *Cyrtanthus*," The American Plant Life Society, California, US, 68 pp.
- Batten, A., 1988: "Flowers of Southern Africa," Southern Book Publishers, Johannesburg, South Africa, pp 122-133

X. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights	
1.1 Genus	<i>Cyrtanthus</i> Ait. FIRELILY
1.2 Species (indicate species)
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	

4. Information on origin, maintenance and reproduction of the variety

4.1 Origin

(a) Seedling (indicate parent varieties)

.....

[]

(b) Mutation (indicate parent variety)

.....

[]

(c) Discovery (indicate where and when)

.....

[]

4.2. Other information

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the state of expression which best corresponds).

Characteristics	Example Varieties	Note
5.1 Inflorescence: number of flowers (14)		
few	C. galpinii, C. sanguineus	3[]
medium	C. mackenii	5[]
many	C. obliquus	7[]
5.2 Flower: shape (19)		
tubular	C. carneus	1[]
narrow funnel-shaped		2[]
broad funnel-shaped		3[]
narrow campanulate		4[]
broad campanulate	C. galpinii	5[]

Characteristics	Example Varieties	Note
5.3 Perianth tube: stripes (inner side) (24)		
absent	C. breviflorus	1[]
present	C. striatus	9[]
5.4 Perianth tube: main color (<u>outer</u> side) (26)	RHS Colour Chart (indicate reference number)
5.5 Perianth lobe: main color (<u>outer</u> side) (34)	RHS Colour Chart (indicate reference number)
5.6 Plant: persistence of leaves (38)		
weak	C. contractus	3[]
medium	C. angustifolius	5[]
strong	C. obrienii	7[]
5.7 Time of beginning of flowering (39)		
very early	C. mackenii	1[]
early	C. parviflorus	3[]
medium	C. angustifolius	5[]
late	C. sanguineus	7[]
very late		9[]

6. Similar varieties and differences from these varieties

Denomination of similar variety	Characteristic in which the similar variety is different ^{o)}	State of expression of similar variety	State of expression of candidate variety

^{o)} In the case of identical states of expressions of both varieties, please indicate the size of the difference.

7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

(a) Conditions for planting

- to be covered completely with soil []
- to be partly uncovered []

(b) Other conditions

7.3 Other information

A representative color photo of the variety should be included in the Technical Questionnaire.