



**European Union
Community Plant Variety Office**

PROTOCOL FOR DISTINCTNESS, UNIFORMITY AND STABILITY TESTS

Gentiana L.

GENTIAN

UPOV Species Code: GENTI

Adopted on 1st December 2005

I - SUBJECT OF THE PROTOCOL

The protocol describes the technical procedures to be followed in order to meet the requirement of Council Regulation 2100/94 on Community Plant Variety Rights. The technical procedures have been agreed by the Administrative Council and are based on general UPOV Document TG/1/3 and UPOV Guideline TG/145/2 dated 04/11/1994 for the conduct of tests for Distinctness, Uniformity and Stability. This protocol applies to all varieties of *Gentiana L.* of the family *Gentianaceae*.

II - SUBMISSION OF PLANT MATERIAL

1. The Community Plant Variety Office (CPVO) is responsible for informing the applicant of:

- the closing date for the receipt of plant material;
- the minimum amount and quality of plant material required;
- the examination office to which material is to be sent.

The applicant is responsible for ensuring compliance with any customs and plant health requirements.

2. Final dates for receipt of documentation and material by the Examination Office:

The final dates for receipt of requests, technical questionnaires and the final date or submission period for plant material will be decided by the CPVO and each Examination Office chosen.

The Examination Office is responsible for immediately acknowledging the receipt of requests for testing, and technical questionnaires. If no or unsatisfactory plant material is submitted the CPVO should be informed as soon as possible.

3. Plant material requirements:

Information with respect to closing dates and submission requirements of plant material for the technical examination of varieties can be found on the CPVO website (www.cpvo.europa.eu) and in the special Issue S2 of the Official Gazette of the Office published yearly in the month of September.

Quality:..... The plant material supplied should be visibly healthy, not lacking in vigour or affected by any important pest or disease, especially virus.

The plant material must not have undergone any treatment unless the CPVO and the examination office allow or request such treatment. If it has been treated, full details of the treatment must be given

Labelling of sample:..... - Species
- File number of the application allocated by the CPVO

- - Breeder's reference
- - Examination reference (if known)
- - Name of applicant
- - The phrase "On request of the CPVO".

III - CONDUCT OF TESTS

1. Variety collection:

A variety collection will be maintained for the purpose of establishing distinctness of the candidate varieties in test. A variety collection may contain both living material and descriptive information. A variety will be included in a reference collection only if plant material is available to make a technical examination.

Pursuant to Article 7 of Council Regulation No. 2100/94, the basis for a collection should be the following:

- varieties listed or protected at the EU level or at least in one of the EEA Member States;
- varieties protected in other UPOV Member States;
- any other variety in common knowledge.

It is the responsibility of Examination Office to keep the variety collection up to date.

2. Material to be examined:

Candidate varieties will be directly compared with other candidates for Community plant variety rights tested at the same Examination Office, and with appropriate varieties in the variety collection. When necessary an Examination Office may also include other candidates and varieties.

3. Characteristics to be used:

The characteristics to be used in DUS tests and preparation of descriptions shall be those referred to in Annex 1. All the characteristics shall be used, providing that observation of a characteristic is not rendered impossible by the expression of any other characteristic, or the expression of a characteristic is prevented by the environmental conditions under which the test is conducted. In the later case, the CPVO should be informed. In addition the existence of some other regulation e.g. plant health, may make the observation of the characteristic impossible.

The Administrative Council empowers the President, in accordance with Article 23 of Commission Regulation N° 1239/95, to insert additional characteristics and their expressions in respect of a variety.

4. Grouping of varieties:

The varieties and candidates to be compared will 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 and which in their various states of expression are fairly evenly distributed throughout the collection. In the case of continuous grouping characteristics overlapping states of expression between adjacent groups is required to reduce the risks of incorrect allocation of candidates to groups. The characters used for grouping are the following:

- (a) Stem: length (characteristic 2)
- (b) Corolla: length (characteristic 32)
- (c) Corolla: diameter at top (characteristic 35)
- (d) Corolla: colour of inner side of lobes (characteristic 37)
- (e) Corolla: colour of upper part of inner side of tube (characteristic 38)
- (f) Corolla: colour of upper part of outer side of tube (characteristic 39)
- (g) Time of flowering (characteristic 60)

5. Trial designs and growing conditions:

The minimum duration of tests will normally be one growing cycle for pot plant varieties and two growing cycles for other types if the results on distinctness and uniformity are conclusive. Tests will be carried out under conditions ensuring normal growth. The size of the plots will be such that plants or parts of plants may be removed for measuring and counting without prejudice to the observations which must be made up to the end of the growing period.

The test design is as follows:

As a minimum, each test should include a total of 20 plants for vegetatively propagated varieties and 40 plants for seed propagated varieties. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

All observations on single plants for vegetatively propagated varieties determined by measurement or counting should be made on 10 plants or parts taken from each of 10 plants and any other observations made on all plants in the test.

All observations on single plants for seed propagated varieties determined by measurement or counting should be made on 20 plants or 20 parts taken from each of 20 plants and any other observations made on all plants in the test.

All observations on the stem should be made on the flowering stem.

All observations on the leaf should be made at the time of full flowering on leaves situated at two thirds of the plant height from the bottom.

All observations on the corolla should be made at the time of full flowering on fully opened flowers.

The test should normally be conducted at one place.

The test for pot plant varieties should be carried out in the glasshouse and for cutflower varieties in the open, under conditions ensuring normal growth.

6. Special tests:

In accordance with Article 83(3) of Council Regulation No. 2100/94 an applicant may claim either in the Technical Questionnaire or during the test that a candidate has a characteristic which would be helpful in establishing distinctness. If such a claim is made and is supported by reliable technical data, a special test may be undertaken providing that a technically acceptable test procedure can be devised.

Special tests will be undertaken, with the agreement of the President of CPVO, where distinctness is unlikely to be shown using the characters listed in the protocol.

7. Standards for decisions:

a) Distinctness

A candidate variety will be considered to be distinct if it meets the requirements of Article 7 of Council Regulation No. 2100/94.

b) Uniformity

For the assessment of uniformity of vegetatively propagated varieties and seed-propagated varieties which are self-pollinated, a population standard of 1% with an acceptance probability of at least 95% should be applied.

For a sample size between 6 and 35 plants for vegetatively propagated varieties, only 1 off-type is allowed.

For a sample size between 36 and 82 plants for seed propagated varieties which are self-pollinated, only 2 off-types are allowed.

For the assessment of uniformity of seed propagated open pollinated and hybrid varieties, relative uniformity standards should be applied.

c) Stability

A candidate will be considered to be sufficiently stable when there is no evidence to indicate that it lacks uniformity.

IV - REPORTING OF RESULTS

After each growing cycle the results will be summarised and reported to the CPVO in the form of a UPOV model interim report in which any problems will be indicated under the headings distinctness, uniformity and stability. Candidates may meet the DUS standards after one growing cycle but in some cases two or more growing cycles may be required. When tests are completed the results will be sent by the Examination Office to the CPVO in the form of a UPOV model final report.

If it is considered that the candidate complies with the DUS standards, the final report will be accompanied by a variety description in the format recommended by UPOV. If not the reasons for failure and a summary of the test results will be included with the final report.

The CPVO must receive interim reports and final reports by the date agreed between the CPVO and the examination office.

Interim reports and final examination reports shall be signed by the responsible member of the staff of the Examination Office and shall expressly acknowledge the exclusive rights of disposal of CPVO.

V - LIAISON WITH THE APPLICANT

If problems arise during the course of the test the CPVO should be informed immediately so that the information can be passed on to the applicant. Subject to prior agreement, the applicant may be directly informed at the same time as the CPVO particularly if a visit to the trial is advisable.

The interim report and final report shall be sent by the Examination Office to the CPVO.

ANNEXES TO FOLLOW

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ANNEX II

Technical questionnaire

ANNEX I TABLE OF CHARACTERISTICS

CPVO N°	UPOV N°	Characteristics	Examples	Note
1.	1.	Plant: growth habit		
		erect	Haiji	1
		semi-erect	Fukujuhai	2
		spreading		3
2.	2.	Stem: length		
		short	Fukujuhai	3
		medium	Alpen Blue	5
		long	Haiji	7
3.	3.	Stem: thickness (main flowering stem)		
		thin	Seishihai	3
		medium	Asayake	5
		thick	Haiji	7
4.	4.	Stem: shape in cross section at mid point		
		circular	Banfukuju	1
		square	Haiji	2
5.	5.	Stem: intensity of green colour		
		light		3
		medium		5
		dark		7
6.	6.	Stem: anthocyanin coloration at two thirds from base		
		absent	Nasuno-hakurei	1
		present	Haiji	9

CPVO N°	UPOV N°	Characteristics	Examples	Note	
7. (+)	8. (+)	Stem: number of internodes longer than 5 mm	few	Fukujuhai	3
			medium	Haiji	5
			many	Nasuno-hakurei	7
8.	9.	Stem: length of internode in central third	short	Fukujuhai	3
			medium	Banfukuju	5
			long		7
9.	10.	Stem: side shoots	absent		1
			present		9
10. (+)	11. (+)	Stem: number of side shoots with only one node	very few	Fukujuhai	1
			few	Seishihai	3
			medium	Asayake	5
			many	Haiji	7
			very many		9
11. (+)	12. (+)	Stem: number of side shoots with more than one node	very few		1
			few	Haiji	3
			medium	Nasuno-otome	5
			many	Momoko	7
			very many		9

CPVO N°	UPOV N°	Characteristics	Examples	Note	
12.	15.	Stem: position of longest leaf	in upper third	Fukujuhai	1
			in central third	Haiji	2
			in lower third	Alpen Blue	3
13.	16.	Leaf: length	short	Seishihai	3
			medium	Haiji	5
			long	Alpen Blue	7
14.	17.	Leaf: width	narrow	Fukujuhai	3
			medium	Banfukuju	5
			broad	Okusinano	7
15. (+)	18. (+)	Leaf: shape	cordate		1
			ovate		2
			broad lanceolate	Banfukuju	3
			lanceolate	Haiji	4
			narrow lanceolate	Fukujuhai	5
			elliptic		6
			narrow elliptic		7
			linear		8
			oblanceolate		9
16 (+)	19 (+)	Leaf: shape in cross section	folded upwards	Haiji	1
			straight	Fukujuhai	2
			reflexed	Asayake	3

CPVO N°	UPOV N°	Characteristics	Examples	Note	
17. (+)	20. (+)	Leaf: shape in longitudinal section	concave	Fukujuhai	1
			straight	Haiji	2
			convex	Alpen Blue	3
18.	21.	Leaf: twisting	absent	Haiji	1
			present	Fukujuhai	9
19.	22.	Leaf: number of conspicuous veins	one	Fukujuhai	1
			three	Asayake	2
			five	Haiji	3
			seven or more		4
20.	23.	Leaf: intensity of green colour	light		3
			medium		5
			dark		7
21.	24.	Leaf: anthocyanin coloration	absent	Fukujuhai	1
			present	Haiji	9
22.	25.	Inflorescence: distribution of flowers	single	Fukujuhai	1
			clustered	Haiji	2
23.	26.	Inflorescence: position of flowers	only terminal		1
			terminal and axillary		2

CPVO N°	UPOV N°	Characteristics	Examples	Note	
24.	28.	<u>Clustered varieties only:</u> Plant: number of terminal flowers	few	Seishihai	3
			medium	Haiji	5
			many		7
25.	29.	<u>Varieties with terminal and axillary flowers only:</u> Plant: number of flowers at central flowering node (clustered varieties only)	few	Seishihai	3
			medium	Haiji	5
			many		7
26.	30.	<u>Varieties with terminal and axillary flowers only:</u> Plant: number of flowering nodes	few	Seishihai	3
			medium	Nasuno-hakurei	5
			many	Haiji	7
27.	31.	Flower: type	single	Haiji	1
			double	Yae-ryukyokuin	2
28. (+)	32. (+)	Corolla: length	short	Alpen Blue	3
			medium	Haiji	5
			long		7
29. (+)	33. (+)	Corolla: diameter at middle third	small	Alpen Blue	3
			medium	Haiji	5
			large	Fukujuhai	7

CPVO N°	UPOV N°	Characteristics	Examples	Note	
30. (+)	34. (+)	Corolla: shape	campanulate	1	
			funnel-shaped	2	
31. (+)	35. (+)	Corolla: diameter at top	small	Alpen Blue	3
			medium	Haiji	5
			large	Fukujuhai	7
32.	36.	Corolla: curvature of lobes	strongly incurved		1
			incurved		3
			straight		5
			reflexed		7
			strongly reflexed		9
33. (+)	37. (+)	Corolla: colour of inner side of lobes	RHS-Colour Chart (indicate reference number)		
34. (+)	38. (+)	Corolla: colour of upper part of <u>inner</u> side of tube	RHS-Colour Chart (indicate reference number)		
35.	39.	Corolla: colour of upper part of <u>outer</u> side of tube	RHS-Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Characteristics	Examples	Note	
36.	40.	Corolla: density of spots on inner side of lobes	absent or very sparse	Asayake	1
			sparse	Haiji	3
			medium	Fukujuhai	5
			dense		7
			very dense		9
37.	41.	Corolla: density of spots on upper part of <u>inner</u> side of tube	absent or very sparse		1
			sparse		3
			medium	Nasuno-hakurei	5
			dense	Haiji	7
			very dense		9
38.	42.	Corolla: density of spots on upper part of <u>outer</u> side of tube	absent or very sparse	Haiji	1
			sparse		3
			medium	Nasuno-hakurei	5
			dense		7
			very dense		9
39.	43.	Corolla: streaked pattern on outer side of tube	absent	Nasuno-hakurei	1
			present	Okusinano	9

CPVO N°	UPOV N°	Characteristics	Examples	Note
40.	44.	Corolla: colour of streaked pattern on outer side of tube	white	1
			green	2
			purplish brown	3
41.	45.	Corolla: number of lobes	less than five	1
			five	2
			more than five	Fukujuhai 3
42.	46.	Corolla: length of lobes	short	3
			medium	Asayake 5
			long	Fukujuhai 7
43.	47.	Corolla: width of lobes	narrow	Nasuno-hakurei 3
			medium	Asayake 5
			broad	Fukujuhai 7
44. (+)	48. (+)	Corolla: shape of lobes	narrow triangular	1
			triangular	2
			broad triangular	Nasuno-hakurei 3
			ovate	Haiji 4
			obovate	5
45.	49.	Corolla: shape of distal end of lobes	acute	Asayake 1
			obtuse	Haiji 2

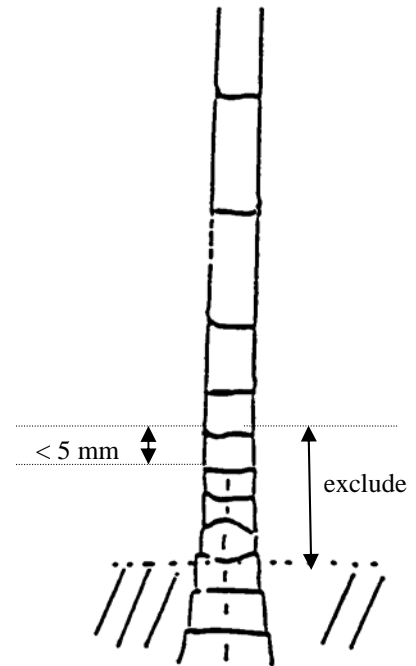
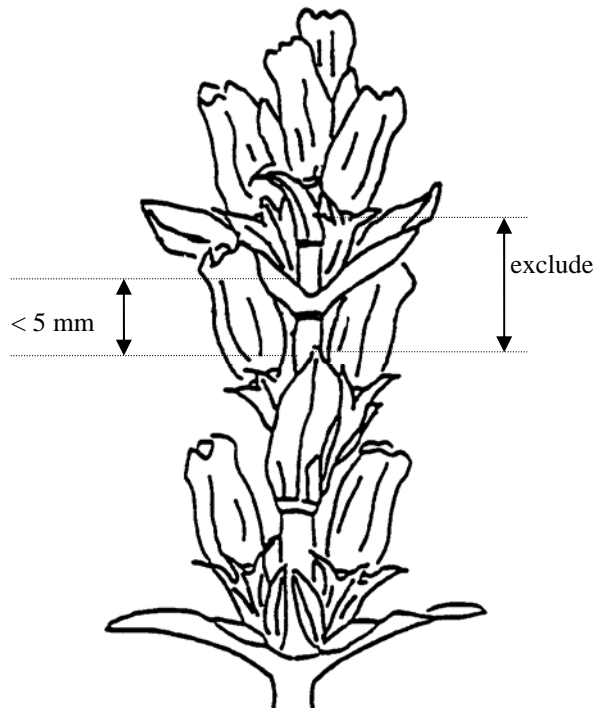
CPVO N°	UPOV N°	Characteristics	Examples	Note	
46. (+)	50. (+)	Paracorolla: presence	absent	1	
			present	9	
47. (+)	51. (+)	Paracorolla: shape of apex	acute	Haiji	1
			truncate	Nasuno-hakurei	2
			concave	Seishihai	3
			split	Fukujuhai	4
48.	52.	Calyx: intensity of green colour	light		3
			medium		5
			dark		7
49.	53.	Calyx: anthocyanin coloration	absent		1
			present		9
50. (+)	54. (+)	Calyx: length of tube	short	Alpen Blue	3
			medium	Hatsukansetsu	5
			long	Seishihai	7
51. (+)	55. (+)	Calyx: diameter of tube	small	Alpen Blue	3
			medium	Seishihai	5
			large	Banfukuju	7

CPVO N°	UPOV N°	Characteristics	Examples	Note	
52.	56.	Calyx: shape of tube	cylindrical	1	
			campanulate	2	
			funnel-shaped	Chiyono-sakazuki	3
53. (+)	57. (+)	Calyx: shape of lobe	narrow lanceolate	1	
			lanceolate	2	
			oblanceolate	Seishihai	3
			ovate	4	
			triangular	5	
54.	58.	Anther: development	rudimentary	1	
			partly developed	2	
			fully developed	Yae-ryukyokuin	3
55.	59.	Anther: shape	cylindrical	1	
			spatulate	2	
56.	60.	Time of flowering	very early	1	
			early	3	
			medium	Nasuno-Otome	5
			late	7	
			very late	Haiji	9
57.	61.	Degree of closing of flowers under low light intensity	weak	3	
			medium	Chiyono-sakazuki	5
			strong	7	

EXPLANATIONS ON THE TABLE OF CHARACTERISTICS

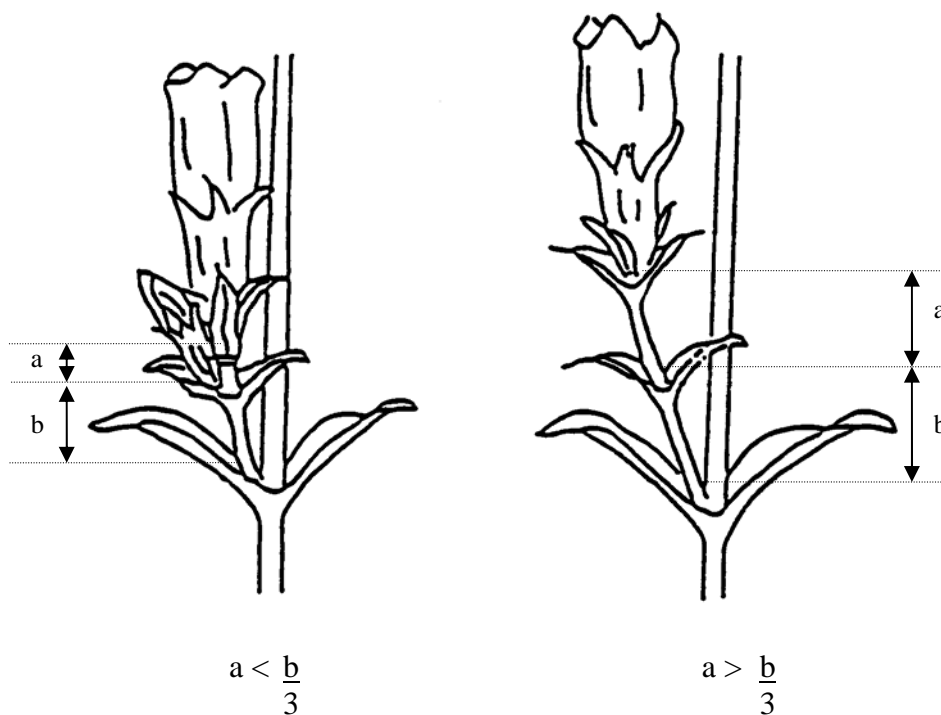
Ad 7 (UPOV 8):

Stem: number of internodes longer than 5 mm



Ad 10 (UPOV 11) + 12 (UPOV 12)

Stem: number of side shoots with only one and with more than one node



one node only

more than one node

Ad 15 (UPOV 18)

Leaf: shape



1

2

3

4

5

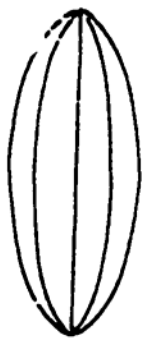
cordate

ovate

broad lanceolate

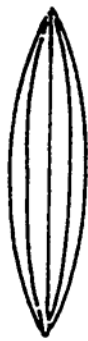
lanceolate

narrow lanceolate



6

elliptic



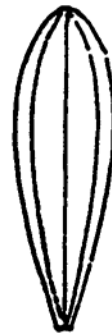
7

narrow elliptic



8

linear

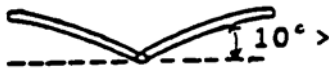


9

oblanceolate

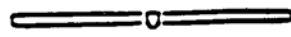
Ad 16 (UPOV 19)

Leaf: shape in cross section



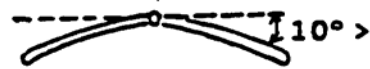
1

folded upwards



2

straight

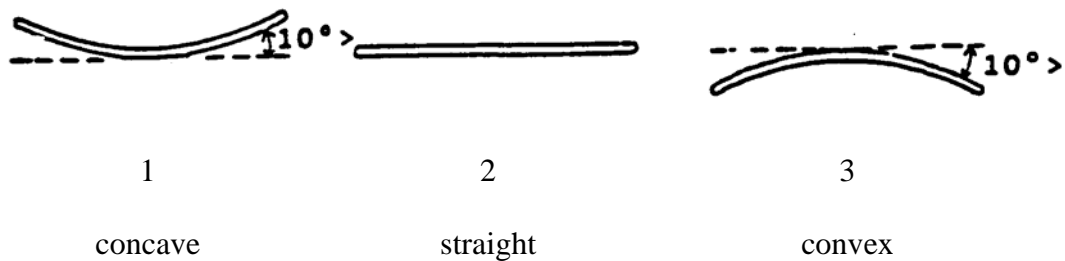


3

reflexed

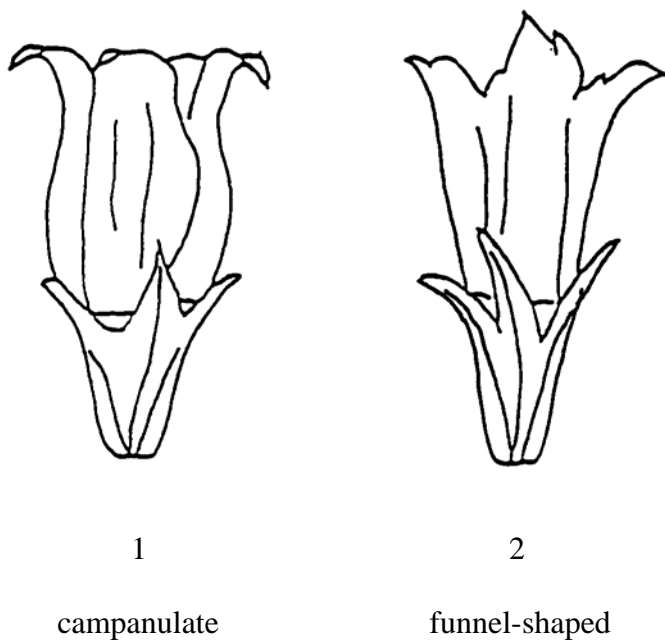
Ad 17 (UPOV 20)

Leaf: shape in longitudinal section



Ad 30 (UPOV 34)

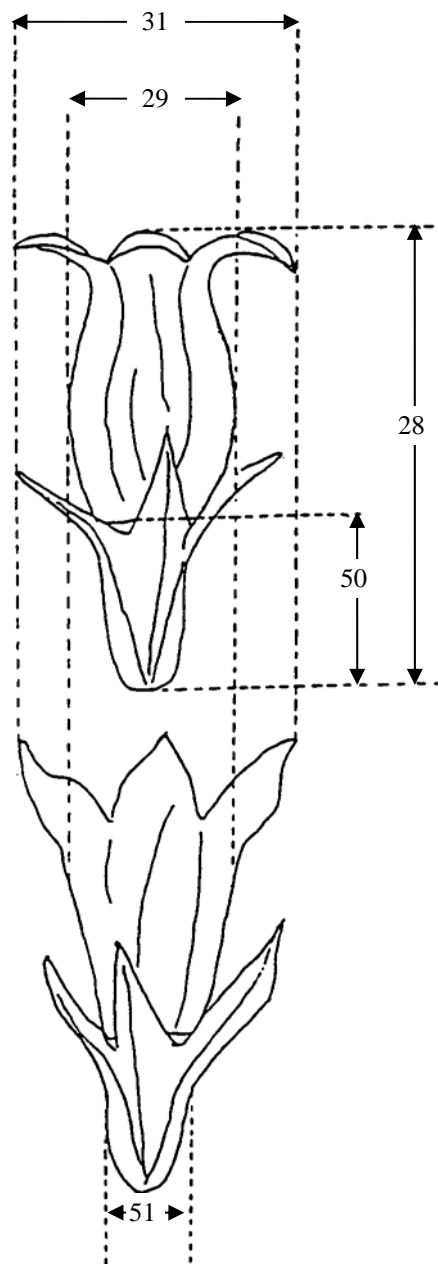
Corolla: shape



Ad. 28 (UPOV 32) + 29 (UPOV 33)+ 31 (UPOV 35) + 50 (UPOV 54) + 51 (UPOV 55)

Corolla: length (28), diameter at middle third (29), diameter at top (31)

Calyx: length (50) and diameter of tube (51)

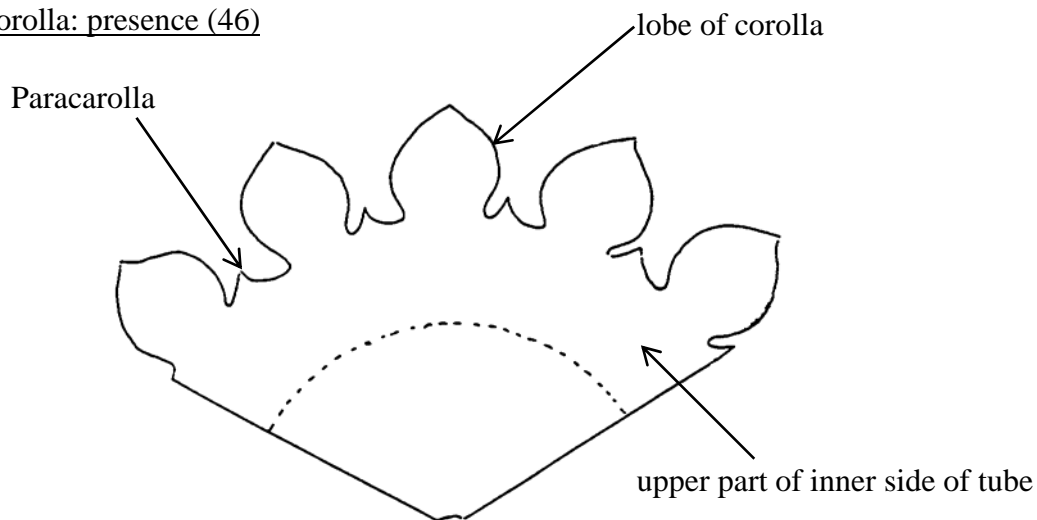


Ad 33 (UPOV 37), 34 (UPOV 38) + 46 (UPOV 50)

Corolla: colour of inner side of lobes (33)

Corolla: colour of upper part of inner side of tube (34)

Paracorolla: presence (46)



Ad 44 (UPOV 48)

Corolla: shape of lobes



1

narrow triangular



2

triangular



3

broad triangular



4

ovate



5

obovate

Ad 47 (UPOV 51)

Paracorolla: shape of apex



1

acute



2

truncate



3

concave



4

split

Ad 53 (UPOV 57)

Calyx: shape of lobe



1

narrow lanceolate



2

lanceolate



3

oblanceolate



4

ovate



5

triangular

LITERATURE

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ANNEX II



European Union
Community Plant Variety Office

TECHNICAL QUESTIONNAIRE

to be completed in connection with an application for Community Plant Variety Rights
Please answer all questions. A question without any answer will lead to a non-attribution
of an application date. In cases where a field / question is not applicable, please state so.

1. Botanical taxon: Name of the genus, species or sub-species to which the variety belongs and common name

Gentiana L.

GENTIAN

Species (indicate)

2. Applicant(s): Name(s) and address(es), phone and fax number(s), Email address, and where appropriate name and address of the procedural representative

.....

.....

3. Variety denomination

a) Where appropriate proposal for a variety denomination:

.....

b) Provisional designation (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, when
and how the variety has been developed):..... []

.....
.....
.....
.....

(d) Other (please specify)..... []

.....
.....
.....
.....

4.2 Method of propagation

(a) Cuttings..... []

(b) *In vitro* propagation []

(c) Seed []

(d) Other (please specify): []

.....
.....
.....
.....

4.3 Other information

In the case of seed propagated varieties: method of production:

(a) Self-pollinated..... []

(b) Cross-pollinated (please give details) []

.....
.....
.....
.....

(c) Hybrid (please give details) []

.....
.....
.....
.....

4.4 Geographical origin of the variety: the region and the country in which the variety was bred or discovered and developed

.....

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

Characteristics		Example varieties	Note
5.1 (2)	Stem: length		
	short	Fukujuhai	3 []
	medium	Alpen Blue	5 []
	long	Haiji	7 []
5.2 (28)	Corolla: length		
	short	Alpen Blue	3 []
	medium	Haiji	5 []
	long		7 []
5.3 (31)	Corolla: diameter at top		
	small	Alpen Blue	3 []
	medium	Haiji	5 []
	large	Fukujuhai	7 []

Characteristics		Example varieties	Note
5.4 (33)	Corolla: colour of inner side of lobes RHS Colour Chart (indicate reference number) 		
5.5 (34)	Corolla: colour of upper part of <u>inner</u> side of tube RHS Colour Chart (indicate reference number) 		
5.6 (35)	Corolla: colour of upper part of <u>outer</u> side of tube RHS Colour Chart (indicate reference number) 		
5.7 (56)	Time of flowering very early early medium late very late	 Nasuno-otome Haiji	 1 [] 3 [] 5 [] 7 [] 9 []
6. Similar varieties and differences from these varieties:			
Denomination of similar variety	Characteristic in which the similar variety is different ¹⁾	State of expression of similar variety	State of expression of candidate variety
¹⁾ 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

A representative printed-out colour photo of the variety **must** be added to the Technical Questionnaire.

7.1 Resistance to pests and diseases

.....

7.2 Special conditions for the examination of the variety

Plant use:

- Pot plant
- Cut flower
- Garden plant
- Other, please indicate:

Other conditions:

- YES, please specify:

- NO

7.3 Other information

- YES, please specify:

- NO.

8. GMO-information required

The variety represents a Genetically Modified Organism within the meaning of Article 2(2) of Council Directive EC/2001/18 of 12/03/2001.

- YES
- NO

If yes, please add a copy of the written attestation of the responsible authorities stating that a technical examination of the variety under Articles 55 and 56 of the Basic Regulation does not pose risks to the environment according to the norms of the above-mentioned Directive.

9. Information on plant material to be examined

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 or pesticide) | Yes [] | No [] |
| (c) Tissue culture | Yes [] | No [] |
| (d) Other factors | Yes [] | No [] |

Please provide details of where you have indicated "Yes":

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I/we hereby declare that to the best of my/our knowledge the information given in this form is complete and correct.

Date

Signature

Name

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