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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

TECHNICAL WORKING PARTY FOR ORNAMENTAL PLANTS AND FOREST TREES

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WORKING PAPER ON REVISED DRAFT TEST GUIDELINES FOR EUSTOMA (LISIANTHUS)
(*Eustoma grandiflorum* (Raf.) Shinners)

Document prepared by experts from Japan

TABLE OF CONTENTS PAGE

I. Subject of these Guidelines

These Test Guidelines apply to all varieties of *Eustoma grandiflorum* (Raf.) Shinners of the family Gentianaceae.

II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the plant material/seed 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:

seed propagated varieties: 1000 seeds;
vegetatively propagated varieties: 40 plantlets.

2. The plant material/seed supplied should be visibly healthy, not lacking in vigor or affected by any important pests or diseases. The quality of the seed to be delivered should not be below the standards of seeds for certification or marketing in the country concerned. The germination capacity should be stated.

3. The plant material/seed 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 conditions ensuring normal growth.

Seed propagated varieties:

Seed sowing: Time: February to March (in Northern Hemisphere).
Temperature: 15°C minimum.
Sowing medium: well-drained, moisture holding, fertile, pH 6.0 to 6.5.
Use cell tray (3 x 3 x 4).
No soil covering.
Bench irrigation.

Planting of seedling: Plant stage: 4 true leaves.
Time: April to May.

Soil: well-drained and moisture holding, fertile, rich in organic material, pH 6.0 to 6.5.

Planting density: 15 × 15 cm.

Temperature: Day: +20 to 25°C.
Night: +10 to 15°C.

Vegetatively propagated varieties:

Planting: Mid March, temperature 18°C.

Planting density: 20 × 20 cm.

Plants pinched after 3 pairs of leaves.

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. As a minimum, each test should include a total of 60 plants for seed propagated varieties and 40 plants for vegetatively propagated varieties which should be divided between two or more replicates. Separate plots for observation and 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 40 plants or 40 parts of plants.

2. For the assessment of uniformity of vegetatively propagated varieties a population standard of 2% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 40 plants, the maximum number of off-types allowed would be 2. For the assessment of uniformity of seed propagated varieties the breeding history of the variety has to be taken into consideration.

3. All observations should be made on flowering plants.

4. The length of the internode and green color of the stem should be observed on the fourth internode from the top.

5. All observations on the leaf should be made on the third leaf from the top. For determining the color of the leaf and the stem the bloom should be removed.

6. All observations on the flower and the pedicel should be made on the second flower to open. Color observation on the petal should be made on its inner side.

7. 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.

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) Plant: height (characteristic 1)
(b) Flower: shape (characteristic 18)
(c) Self-colored varieties only: Petal: color (characteristic 23) with the following groups:
Gr. 1: white
Gr. 2: yellow
Gr. 3: light green
Gr. 4: pink
Gr. 5: red
Gr. 6: violet
(d) Bi-colored varieties only: Petal: main color (characteristic 24) with the following groups:
Gr. 1: white
Gr. 2: yellow
Gr. 3: light green
Gr. 4: pink
Gr. 5: red
Gr. 6: violet
(e) Bi-colored varieties only: Petal: secondary color (characteristic 25) with the following groups:
Gr. 1: pink
Gr. 2: red
Gr. 3: violet
(f) Petal: color of base (characteristic 28)
(g) Time of beginning of flowering (characteristic 33)

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. 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 ejemplo	Note/ Nota
1. **(*)**	**Plant: height**					
	short				White Coronet	3
	medium				Deep Purple, Momo Sen	5
	tall				Yuki no Mine	7
2.	**Stem: thickness**					
	thin				White Coronet	3
	medium				Momo Sen	5
	thick				Yuki no Mine	7
3.	**Stem: number of nodes**					
	few				White Coronet	3
	medium				Momo Sen	5
	many				Purple Robin	7
4.	**Stem: length of fourth internode below the top flower**					
	short				White Coronet	3
	medium				Momo Sen	5
	long					7
5.	**Stem: green color**					
	light					3
	medium				Yuki no Mine	5
	dark				Fuku Shihai	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6.	**Stem: number of branches on main stem**					
	few				White Coronet	3
	medium				Momo Sen	5
	many				Purple Robin	7
7.	**Stem: position of branching**					
	upper part only				Purple moon	1
	upper and middle part				Momo Sen	2
	whole stem					3
8. **(+)**	**Leaf: attitude relative to stem**					
	semi-erect				White Coronet	1
	horizontal				Momo Sen	2
	semi-drooping					3
9. **(*)** **(+)**	**Leaf: length**					
	short				White Coronet	3
	medium				Momo Sen	5
	long					7
10. **(*)** **(+)**	**Leaf: width**					
	narrow				White Coronet	3
	medium				Momo Sen	5
	broad					7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11. **(*)** **(+)**	**Leaf: shape**					
	lanceolate					1
	ovate				Momo Sen	2
	broad ovate					3
12. **(*)**	**Leaf: bloom**					
	absent					1
	present					9
13. **(*)**	**Leaf: green color of upper side (without bloom)**					
	light					3
	medium				Momo Sen	5
	dark					7
14.	**Leaf: green color of lower side (without bloom)**					
	light					3
	medium					5
	dark					7
15. **(*)**	**Flower: type**					
	single					1
	double					2

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16. **(*)**	**<u>Varieties with double flowers only</u>: Flower: number of petals**					
	few					3
	medium				King of Blue Flash	5
	many				Deep Purple	7
17. **(*)**	**Flower: diameter**					
	small					3
	medium				Momo Sen	5
	large				Deep Purple	7
18. **(*)** **(+)**	**Flower: shape**					
	campanulate				Momo Sen	1
	narrow funnel-shaped				Purple Comet	2
	wide funnel-shaped				Fuku Shihai	3
	saucer-shaped				Deep Purple	4
19. **(*)**	**Petal: length**					
	short					3
	medium				Momo Sen	5
	long				Yuki no Mine	7
20. **(*)**	**Petal: width**					
	narrow				Deep Purple	3
	medium				Yuki no Mine	5
	broad					7

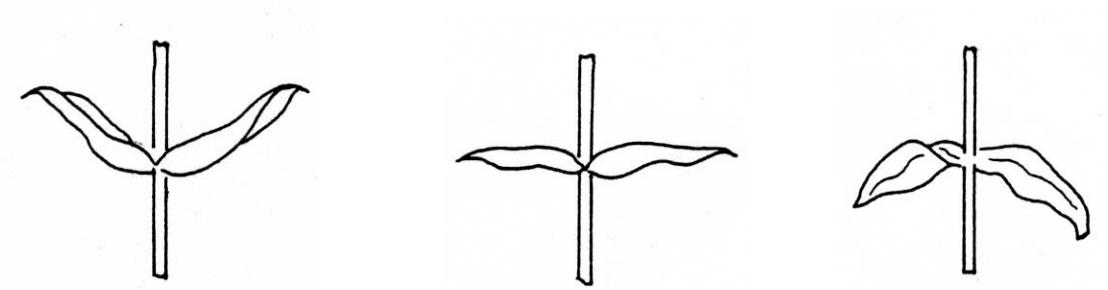
	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21.	**Petal: undulation of margin**					
	weak				Momo Sen	3
	medium				Yuki no Mine	5
	strong				Deep Purple	7
22. **(*)**	**Petal: number of colors**					
	self-colored					1
	bi-colored					2
23. **(*)**	**Self-colored varieties only: Petal: color**					
	RHS Colour Chart (indicate reference number)					
24. **(*)**	**Bi-colored varieties only: Petal: main color**					
	RHS Colour Chart (indicate reference number)					
25. **(*)**	**Bi-colored varieties only: Petal: secondary color**					
	RHS Colour Chart (indicate reference number)					
26. **(*)**	**Bi-colored varieties only: Petal: relative area of secondary color**					
	small					3
	medium					5
	large					7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
27. **(*)**	**<u>Bi-colored varieties only</u>:** **Petal: color pattern**					
	picotee				Azuma no Yosooi	1
	shaded				Rainy Orange	2
	splashed				King of Blue Flash	3
28. **(*)**	**Petal: color of base**					
	green				Haku Sen	1
	violet				Fuku Shihai	2
	brown				Deep Purple	3
29. **(+)**	**Calyx: length**					
	short					3
	medium				Yuki no Mine	5
	long					7
30.	**Calyx: anthocyanin coloration**					
	absent				Haku Sen	1
	present				Shi Sen	9
31. **(+)**	**Sepal: attitude relative to petal**					
	adpressed					1
	spreading					2

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
32.	**Pedicel: length**					
	short				White Coronet	3
	medium				Haku Sen	5
	long					7
33. **(*)**	**Time of beginning of flowering**					
	early				Azuma no Yosooi	3
	medium				Haku Sen	5
	late				Fuku Shihai	7

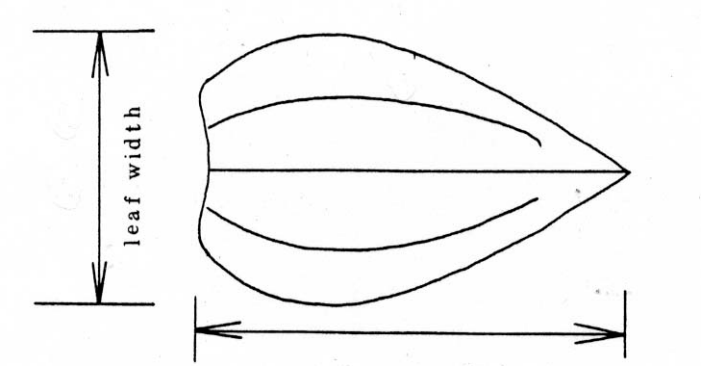
VIII. Explanations on the Table of Characteristics

Ad. 8: Leaf: attitude relative to the stem



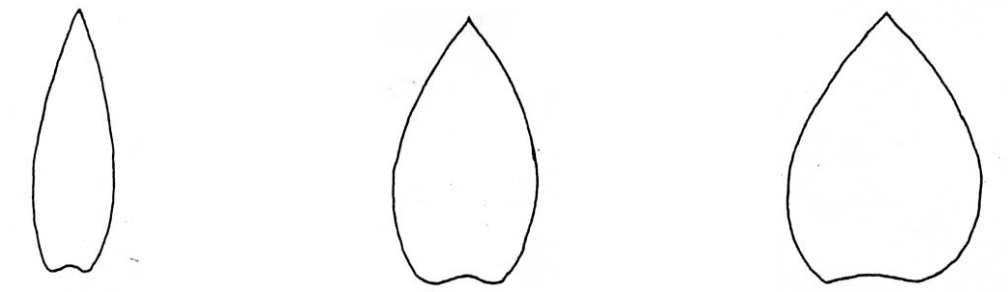
1	2	3
semi-erect	horizontal	semi-drooping

Ad. 9 and 10: Leaf: length (9) and width (10)



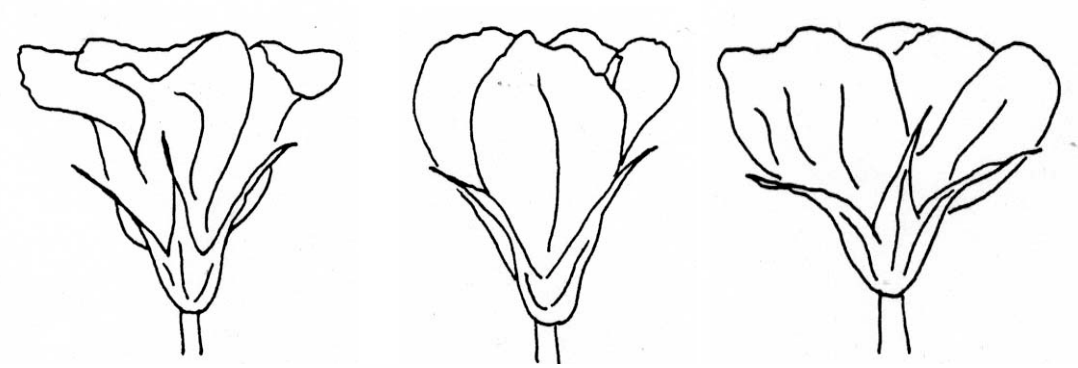
leaf length

Ad. 11: Leaf: shape



1	2	3
lanceolate	ovate	broad ovate

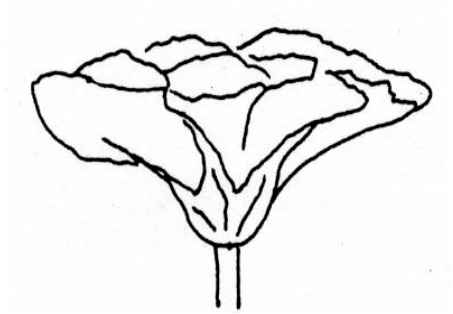
Ad. 18: Flower: shape



1
campanulate

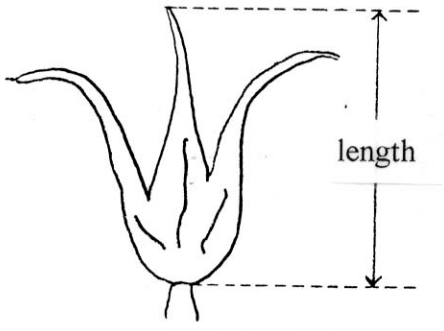
2
narrow funnel-shaped

3
wide funnel-shaped

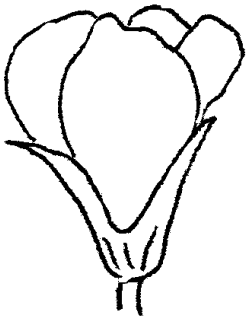


4
saucer-shaped

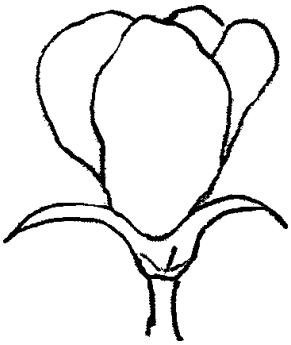
Ad. 29: Calyx: length



Ad. 31: Sepal: attitude relative to petal



1
adpressed



2
spreading

IX. Literature

Kiyoshi Okawa, 1992: Eustoma (Torukogikyo) Seibunndo-Shinkosya Co., Tokyo, JP.

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. Species	*Eustoma grandiflorum* (Raf.) Shinners EUSTOMA (LISIANTHUS)
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 of unknown parentage

.....……. [ ]

(b) Produced by controlled pollination (indicate parent varieties)

- Seed bearing parent (indicate parent)

.....……... [ ]

- Pollen parent (indicate parent)

.....……. [ ]

(c) Produced by open pollination of (indicate seed bearing parent plant)

.....…….. [ ]

(d) Mutation or sport from (indicate original parent variety)

.....……. [ ]

(e) Discovery (indicate where and when)

.....……. [ ]

4.2 Method of reproduction

- Seed [ ]

- Cuttings [ ]

- *In vitro* propagation [ ]

4.3 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 (1)	**Plant: height**		
	short	White Coronet	3[ ]
	medium	Deep Purple, Momo Sen	5[ ]
	tall	Yuki no Mine	7[ ]
5.2 (18)	**Flower: shape**		
	campanulate	Momo Sen	1[ ]
	narrow funnel-shaped	Purple Comet	2[ ]
	open funnel-shaped	Fuku Shihai	3[ ]
	saucer-shaped	Deep Purple	4[ ]
5.3i (23)	**<u>Self-colored varieties only</u>: Petal: color**		
	RHS Colour Chart (indicate reference number)	……..	
5.3ii (23)	**<u>Self-colored varieties only</u>: Petal: color**		
	white		1[ ]
	yellow		2[ ]
	light green		3[ ]
	pink		4[ ]
	red		5[ ]
	violet		6[ ]

	Characteristics	Example Varieties	Note
5.4i (24)	**<u>Bi-colored varieties only</u>: Petal: main color**		
	RHS Colour Chart (indicate reference number)	…….	
5.4ii (24)	**<u>Bi-colored varieties only</u>: Petal: main color**		
	white		1[ ]
	yellow		2[ ]
	light green		3[ ]
	pink		4[ ]
	red		5[ ]
	violet		6[ ]
5.5i (25)	**<u>Bi-colored varieties only</u>: Petal: secondary color**		
	RHS Colour Chart (indicate reference number)	……..	
5.5ii (25)	**<u>Bi-colored varieties only</u>: Petal: secondary color**		
	pink		1[ ]
	red		2[ ]
	violet		3[ ]
5.6 (28)	**Petal: color of base**		
	green	Haku Sen	1[ ]
	violet	Fuku Shihai	2[ ]
	brown	Deep Purple	3[ ]
5.7 (33)	**Time of beginning of flowering**		
	early	Azuma no Yosooi	3[ ]
	medium	Haku Sen	5[ ]
	late	Fuku Shihai	7[ ]

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 Use of the variety:

Pot plant [ ]

Cut flower [ ]

Other (specify) [ ] …….

7.3 Special conditions for the examination of the variety

7.4 Other information

A representative color photo of the variety should be added to 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 that question is yes, please attach a copy of such an authorization.

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