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SPATIAL DEPENDENCE IN SPACED PLANT HERBAGE TRIALS

Document prepared by experts from the United Kingdom

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I. Subject of these Guidelines

These Test Guidelines apply to all vegetatively propagated varieties of *Zantedeschia* Spreng of the family Araceae.

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 compiled with. As a minimum, the following quantity of plant material is recommended:

10 young plants 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 under shade netting (40 %) under the following growing conditions:

- | | | |
|--------------------|---|--|
| Temperature: | - | preferably between 15 - 25/C |
| Planting time: | - | August (Southern Hemisphere) |
| Substrate: | - | very well-drained substrate rich in humus |
| Planting distance: | - | 5 per m ² |
| Fertilization: | - | organic fertilization. Not too much nitrogen for deciduous varieties. Spore elements may be added. |
| Irrigation: | - | Deciduous varieties: keep moist but not wet.
<i>Z. aethiopica</i> : prefers more water. |

Air humidity: - Deciduous varieties prefer less humidity than *Z. aethiopica*.

Shading: 40 % shade cloth

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 10 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 10 plants or 10 typical parts, one from each of 10 plants.

2. For the assessment of uniformity a population standard of 1% and an acceptance probability of 95% should be applied. In the case of a sample size of 10 plants, the maximum number of off-types allowed would be 1.

3. All observations should be made on plants that have flowers of maximum size, during the peak flowering time.

4. Unless otherwise indicated, all observations on the flower should be made at the beginning of anther dehiscence.

5. 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) Plant type (characteristic 1)

(b) Spathe: length (characteristic 22)

(c) Spathe: width (characteristic 23)

- (d) Spathe: main color of inner side (characteristic 26)
- (e) Spadix: main color of male part shortly before anther dehiscence (characteristic 40)

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 real 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.

VII. Table of Characteristics

English	Example Varieties	Note
1. Plant type deciduous semi-deciduous evergreen	<i>Z. rehmannii</i> <i>Z. aethiopica</i>	1 2 3
(*) 2. Plant: height short medium tall	<i>Z. rehmannii</i>	3 5 7
3. Plant habit: upright semi-upright spreading	<i>Z. rehmannii</i> <i>Z. aethiopica</i>	1 2 3
4. Leaf blade: length short medium long		3 5 7
5. Leaf blade: width narrow medium broad		3 5 7
6. Leaf blade: position of broadest part in the middle slightly below the middle far below the middle		1 2 3
7. Leaf blade: lobes absent present	<i>Z. rehmannii</i> <i>Z. aethiopica</i>	1 9
8. Leaf blade: length of lobes short medium long	<i>Z. aethiopica</i> <i>Z. pentlandii</i>	3 5 7
9. Leaf blade: angle at apex (excluding caudate tip) small medium large		3 5 7
10. Leaf blade: intensity of green color of <u>upper</u> side		

light		3
medium		5
dark		7
11. Leaf blade: grooving along secondary veins		
absent or very weak		1
weak		2
strong		3
13. Leaf blade: undulation of margin		
absent or very weak		1
weak		2
strong		3
14. Leaf blade: spots on upper side		
absent		1
present		9
15. Leaf blade: size of spots on upper side		
small		3
medium		5
large		7
16. Leaf blade: number of spots on upper side		
few		3
medium		5
many		7
17. Petiole: length		
short		3
medium		5
long		7
18. Peduncle: length		
very short		1
short		3
medium		5
long		7
very long		9
19. Peduncle: thickness		
thin		3
medium		5
thick		7
20. Peduncle: anthocyanin coloration		
absent or very weak		1

weak		3
medium		5
strong		7
very strong		9
21. Peduncle: mottling		
absent or very weak		1
weak		2
strong		3
22. Spathe: length		
very short		1
short		3
medium		5
long		7
very long		9
23. Spathe: width		
very narrow		1
narrow		3
medium		5
broad		7
very broad		9
24. Spathe: position of broadest part		
in the middle		1
slightly below the middle		2
far below the middle		3
25. Spathe: shape of distal part (excluding caudate tip)		
acute		1
obtuse		2
rounded		3
26. Spathe: main color of inner side		
RHS Colour Chart (indicate reference number)		
27 Spathe: color fading of main color from base to apex (inner side)		
absent or very weak		1
weak		2
strong		3
28. Spathe: differently colored spot at the base (throat) (inner side)		
absent		1

present		9
29. Spathe: size of differently colored spot at the base (throat) (inner side) small medium large		3 5 7
30. Spathe: color of differently colored spot at the base (throat) (inner side) - RHS colour chart (indicate reference number)		
31. Spathe: main color of outer side RHS Colour Chart (indicate reference number)		
32. Spathe: texture thin medium thick		3 5 7
33. Spathe: grooving along veins absent or very weak weak strong		1 2 3
34. Spathe: height of overlapping part low medium high		3 5 7
35. Spathe: angle of middle part to the peduncle small medium large		3 5 7
36. Spathe: shape of middle zone in cross section very concave slightly concave flat slightly convex very convex		1 3 5 7 9
37. Spadix: length very short		1

short		3
medium		5
long		7
very long		9
38. Spadix: width at middle of male part		
very narrow		1
narrow		3
medium		5
broad		7
very broad		9
39. Spadix: tapering towards the apex		
very weak		1
weak		3
medium		5
strong		7
very strong		9
40. Spadix: main color of male part shortly <u>before</u> anther dehiscence		
41. Degree of fading of flower color with age		
absent or very weak		1
weak	Marshmallow	2
strong		3
42. Degree of greening of flower color with age		
absent or very weak		1
weak		2
strong	<i>Z. albomaculata</i>	3
43. Degree of intensifying of flower color with age		
absent or very weak		1
weak		2
strong	<i>Z. rehmannii</i>	3
44. Time of flowering		
early		3
medium		5
late		7

VIII. Explanation on the Table of Characteristics

IX. Literature

- Letty, Cythna, 1973: "The Genus *Zantedeschia*", Bothalia 11, 1 & 2, pp 5 - 26.

X. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)
<p>TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>	
1.1 Genus	<i>Zantedeschia</i> Spreng. ARUM LILY
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 the Test Guidelines; please mark the state of expression which best corresponds).

Characteristics	Example Varieties	Note
5.1 Spathe: length (22) very short short medium long very long		1 [] 3 [] 5 [] 7 [] 9 []
5.2 Spathe: width (23) very narrow narrow medium broad very broad		1 [] 3 [] 5 [] 7 [] 9 []
5.3 Spathe: main color of inner side (26) RHS Colour Chart (indicate reference number)		
5.4 Spadix: main color of male part shortly before anther dehiscence (40)		

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
<hr/> <p>^{o)} In the case of identical states of expression of both varieties, please indicate the size of the difference.</p>			
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			

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