



TWO/42/13

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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
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**TECHNICAL WORKING PARTY FOR ORNAMENTAL PLANTS
AND FOREST TREES**

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EXERCISE ON COLOR

Document prepared by the European Community

Background

1. At its forty-first session, held in Wageningen, the Netherlands, from June 9 to 13, 2008, the Technical Working Party for Ornamental Plants and Forest Trees (TWO) discussed document TGP/14/1 Draft 6, Section 2, Subsection 3: Color and document TWO/41/3 Add. 'Addendum to TGP Documents: Conclusions of the workshop on TGP/14 Section 2, Subsection 3: Color'. Document TWO/41/3Add. presented the conclusions of the TGP/14 Workshop, which included the proposal that the use of characteristics for "number of colors" should be avoided as the starting point for describing color distribution and patterns. Instead, it was agreed that the colors should first be described, followed by characteristics explaining the area, distribution, pattern etc. of each color. That approach to describing colors is also called 'the Lisbon approach'.

2. The TWO agreed to start using the proposals as set out in document TWO/41/3 Add. in the preparation of draft Test Guidelines for 2009. In order to develop and test the approach to color characteristics proposed in document TWO/41/3 Add., the TWO agreed to conduct an exercise on color in *Alstroemeria*, *Canna* and *Phalaenopsis* to see if characteristics based on that approach would be more effective than the traditional approach. The TWO agreed that the European Community should coordinate a subgroup to develop proposals for the exercise to be conducted by the TWO, in which the two approaches would be evaluated. At the forty-first session of the TWO, experts from Australia, France, Germany, Japan, Mexico, the

Netherlands, New Zealand, United Kingdom and the Office of the Union agreed to participate in the subgroup. After the TWO session, on request, the Republic of Korea was added to the subgroup. It was agreed that the results of the exercise would be presented at the forty-second session of the TWO. It was agreed that experts from the Netherlands would provide photographs of Phalaenopsis and Alstroemeria varieties, and experts from France would provide photographs of Canna varieties. The selected photographs would then be circulated to the participants of the subgroup of the TWO, who would be invited to describe the color characteristics of the flowers as contained in the relevant Test Guidelines, and according to the approach in document TWO/41/3 Add.

3. Experts from the Netherlands provided photographs of Phalaenopsis and Alstroemeria varieties, of which, respectively, 8 and 12 photographs were selected for the exercise. Experts from France provided photographs of Canna varieties, of which 2 photographs were selected for the exercise.

Organization of the Exercises

4. The exercises were organized as follows:

5. On March 1, 2009, Circular E_937 was sent to all TWO experts to explain the organization of the exercise. Photographs of the flowers of the selected varieties of Phalaenopsis, Alstroemeria and Canna were placed on the TWO/42 Area of the UPOV Website. There was an explanation as to which part of the flower should be observed for the exercise, as well as the 'Japan's distribution chart (document TWO/41/3 Add. Annex II, page 5). The photographs had reference numbers but the variety names were not provided. Participants were requested to fill in their observations for each of the varieties in a table.

Exercise on Phalaenopsis

Exercise 1: 'TG' Approach: TWO experts were invited to describe a number of color characteristics of the petals of each of the varieties. The characteristics to be described were characteristics 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74 and 75 of the current draft Test Guidelines: document TG/213/2 (proj1).

Exercise 2: 'Lisbon' approach: TWO experts were invited to describe a number of color characteristics of the petals of each of the varieties. For this exercise, a set of characteristics were designed according to the approach of document TWO/41/3 Add., paragraph 4, covering the color description of the petal similar to the 'TG' approach.

Exercise on Alstroemeria

Exercise 1: 'TG' Approach: TWO experts were invited to describe a number of color characteristics of the outer tepals of each of the varieties. The characteristics to be described were characteristic 12, 13, 14, 15, 16, 17 and 18 of the current Guideline: document TG/29/7.

Exercise 2: 'Lisbon' approach: TWO experts were invited to describe a number of color characteristics of the outer tepals of each of the varieties. For this exercise, a set of characteristics were designed according to the approach of document TWO/41/3 Add., paragraph 4, covering the color description of the petal similar to the 'TG' approach.

Exercise on Canna

Exercise 1: 'TG' Approach: TWO experts were invited to describe a number of color characteristics of the staminodes of each of the varieties. The characteristics to be described were characteristic 18, 19, 20, 21, 22, 23, 24, 25, 26 and 27 of the current (draft) Guideline: document TG/CANNA (proj.4).

Exercise 2: 'Lisbon' approach: TWO experts were invited to describe a number of color characteristics of the staminodes of each of the varieties. For this exercise, a set of characteristics were designed according to the approach of document TWO/41/3 Add., paragraph 4, covering the color description of the petal similar to the 'TG' approach.

Participation in Exercise

6. A summary of the participation by TWO experts in the exercises is provided below:

Exercise on Phalaenopsis

Exercise 1: Participation: Canada (8 varieties), CIOPORA (8 varieties), Germany (8 varieties), Japan (8 varieties), United Kingdom (8 varieties), European Community (participation with 3 different experts): CPVO-1 (8 varieties), CPVO-2 (8 varieties), CPVO-3 (8 varieties)

Exercise 2: Participation: Canada (8 varieties), CIOPORA (8 varieties), Germany (3 varieties), Japan (8 varieties), United Kingdom (8 varieties), European Community (participation with 3 different experts): CPVO-1 (8 varieties), CPVO-2 (8 varieties), CPVO-3 (8 varieties)

Exercise on Alstroemeria

Exercise 1: Participation: Australia (12 varieties), Canada (2 varieties), Germany (3 varieties), Japan (12 varieties), United Kingdom (12 varieties), European Community (participation with 2 different experts): CPVO-1 (12 varieties), CPVO-3 (12 varieties)

Exercise 2: Participation: Australia (12 varieties), Canada (2 varieties), Germany (3 varieties), Japan (12 varieties), United Kingdom (12 varieties), European Community (participation with 2 different experts): CPVO-1 (12 varieties), CPVO-3 (12 varieties)

Exercise on Canna

Exercise 1: Participation: Australia (2 varieties), Canada (2 varieties), Germany (2 varieties), Japan (2 varieties), United Kingdom (2 varieties), European Community (participation with 3 different experts): CPVO-1 (1 variety), CPVO-2 (2 varieties), CPVO-3 (2 varieties)

Exercise 2: Participation: Australia (2 varieties), Canada (2 varieties), Germany (2 varieties), Japan (2 varieties), United Kingdom (2 varieties), European Community (participation with 3 different experts): CPVO-1 (2 varieties), CPVO-2 (2 varieties), CPVO-3 (2 varieties)

Results of the Exercise

7. The results of the exercises are presented as follows:

Annex I:	Phalaenopsis: Summary of Exercise 1: 'TG' Approach
Annex II:	Phalaenopsis: Summary of 'Lisbon' approach
Annex III:	Alstroemeria: Summary of Exercise 1: 'TG' Approach
Annex IV:	Alstroemeria: Summary of 'Lisbon' approach
Annex V:	Canna: Summary of Exercise 1: 'TG' Approach
Annex VI:	Canna: Summary of 'Lisbon' approach
Annex VII:	Comments sent by participants
Annex VIII:	Phalaenopsis: photographs
Annex IX:	Alstroemeria: photographs
Annex X:	Canna: photographs

8. The photographs of the varieties used in the exercise are provided as follows in Annex VIII (Phalaenopsis), Annex IX (Alstroemeria) and in Annex X (Canna).

Summary of the Comments

9. A summary of the comments received, which can be used as a basis for discussion, is as follows:

- The new approach is in most cases more complex to handle, leading to more characteristics to observe and therefore more time consuming.
- In general there were difficulties with shaded colors, color distributions with unclear or unsharp borders and colors with a small surface area (like stripes or spots).
- Breeders expressed the fear that the Lisbon approach would be too precise and this might lead to misinterpretations and smaller minimum distances between varieties.
- Some elements of the Lisbon approach should be refined, like: comes color 2A before 2D or after? And the Japanese distribution chart should either be refined or areas of the organ should be described separately.
- Addition of a photo to the variety description might help to illustrate the description.
- For some crops the TG approach might be better, for others the Lisbon approach. It should be handled on a case by case basis in a flexible system.
- The added value of the Lisbon approach was doubted by some participants.

[Annexes follow]

ANNEX I

PHALAEOPSIS: SUMMARY OF EXERCISE 1: 'TG' APPROACH

Phalaenopsis: TG Approach	NOTE	NOTE	NOTE
Characteristic	variety 1	variety 2	variety 3
64. Petal: main color of upper side	8x yellow	2x blue pink, 5 x violet, 1x light blue violet	1x purple, 6x violet
65. Petal: shading	7x absent and 1x present (small)	7x present (one doubt) and one absent	8x present
66. Petal: color of shade	1x light red pink and rest N/A	4x pink; 3x white; 1x N/A	6x purple - 2x white
67. Petal: spots	8x present	8x absent	6x absent and 2x present
68. Petal: number of spots	2x Note 5, 2x Note 6, 4x Note 7	8x N/A	6x N/A and 2x few
69. Petal: color of spots	6x red , 1x dark pink red, 1x brown red	8x N/A	6x N/A and 2x purple
70. Petal: stripes	7x absent and 1x present	7x absent and 1x present	7x absent and 1x present
71. Petal: number of stripes	1x medium; rest N/A	7x N/A and 1x many	7x N/A and 1x many
72. Petal: color of stripes	1x reddish - same as spots	7x N/A and 1x purple	7x N/A and 1x purple
73. Petal: netting	7x absent and 1x present	7x absent and 1x present	6x absent and 2x present
74. Petal: density of netting	7x N/A - 1x very few	7x N/A and 1x few to medium	6x N/A and 1x many and 1x few to medium
75. Petal: color of netting	7x N/A - 1x orange like (same as spots)	7x N/A and 1x purple	6x N/A and 2x purple

Phalaenopsis part 1: TG Approach	NOTE	NOTE	NOTE
Characteristic	variety 4	variety 5	variety 6
64. Petal: main color of upper side	1x light yellow, 4x light yellow orange, 2x light yellow brown	4x white - 2x light yellow	6x white - 1x confused about main color
65. Petal: shading	4x absent - 3x present	5x absent - 1x present	6x absent
66. Petal: color of shade	4x N/A - 3x white/light blue pink	5x N/A - 1x white	6x N/A
67. Petal: spots	7x present	6 x present	7x present
68. Petal: number of spots	in general medium to many	4x few - 2x many	3x many - 1x medium - 3x few/very few
69. Petal: color of spots	purple/violet	4x purplish - 2x reddish	1x red, 3x dark purple red, 1x purple, 2x dark violet
70. Petal: stripes	7x absent	6x absent	7x absent
71. Petal: number of stripes	7x N/A	6x N/A	7x N/A
72. Petal: color of stripes	7x N/A	6x N/A	7x N/A
73. Petal: netting	7x absent	6x absent	7x absent
74. Petal: density of netting	7x N/A	6x N/A	7x N/A
75. Petal: color of netting	7x N/A	6x N/A	7x N/A

Phalaenopsis: TG Approach	NOTE	NOTE
Characteristic	variety 7	variety 8
64. Petal: main color of upper side	4x purplish - 3x white	4x reddish - 3x yellowish
65. Petal: shading	4x absent - 3x present	3x absent - 4x present
66. Petal: color of shade	4x N/A - 3x purplish	3x N/A - 1x white - 3x reddish
67. Petal: spots	3x absent - 4x present	7x present (one has doubts whether netting or spots)
68. Petal: number of spots	3x N/A - 4x many	4x many, 1x many to very many, 2x very many
69. Petal: color of spots	3x N/A - 4x purplish	7x reddish (one reply indicates that the spots can be the main color)
70. Petal: stripes	7x absent	3x absent - 4x present
71. Petal: number of stripes	7x N/A	3x N/A - 1x few - 1x medium - 2x many
72. Petal: color of stripes	7x N/A	3x N/A - 1x no score - 2x red purple - 1x orange like
73. Petal: netting	4x absent - 3x present	4x absent - 3x present
74. Petal: density of netting	4x N/A - 3x strong/dense	4x N/A - 2x few - 1x medium - 1x many
75. Petal: color of netting	4x N/A - 3x whitish	3x N/A - 1x yellow - 3x reddish

[Annex II follows]

ANNEX II

PHALAEOPSIS: SUMMARY OF EXERCISE 2: 'LISBON' APPROACH

Phalaenopsis Exercise 2: 'Lisbon' approach	NOTE
Characteristic	variety 1
1.1 Petal: color 1	8x yellow
1.2 Petal: color 2	8x reddish colors
1.3 Petal: color 3	6x N/A + 1x purple red + 1x orange red
1.4 Petal: color 4	7x N/A + 1x light red pink
2.1 Petal: area of color 1	1x note 4, 5x note 5, 1x note 6, 1x note 7
2.2 Petal: area of color 2	1x note 1, 1x note 2, 1x note 3, 1x note 4, 3x note 5, 1x note 6
2.3 Petal: area of color 3	6x N/A + 1x very small + 1x small to medium
2.4 Petal: area of color 4	7x N/A + 1x very small
3.1(a) Petal: distribution_color 1	6x scattered, 1x scattered but not at base, 1x center + top
3.1(b) Petal: distribution_color 1	4x type 1-2:3 + 1x type 1-2:2 + 1x 1-1:B + 2x ??
3.2(a) Petal: distribution_color 2	1x at top + 7x scattered
3.2(b) Petal: distribution_color 2	1x type 1-2:7 + 2x type 1-2:6 + 2x type 1-2:5 + 1x type 2-1:10 + 1x ??
3.3(a) Petal: distribution_color 3	1x scattered + 1x at base + 6x N/A
3.3(b) Petal: distribution_color 3	1x type 2-2:2 + 1x type 1-2:B + 6x N/A
3.4(a) Petal: distribution_color 4	7x N/A + 1x at top and margin
3.4(b) Petal: distribution_color 4	7x N/A + 1x type 2-2:5
4.1 Petal: shape of color 1	8x continuously dispersed
4.2 Petal: shape of color 2	5x spotted + 1x netted + 1x continuously dispersed/spotted + 1x several mixed patterns
4.3 Petal: shape of color 3	6x N/A + 2x spotted
4.4 Petal: shape of color 4	7x N/A + 1x shaded
5.1 Petal: border of color 1	7x clearly defined to slightly diffused + 1x ??
5.2 Petal: border of color 2	5x clearly defined to slightly diffused + 2x slightly diffused + 1x slightly to moderately diffused
5.3 Petal: border of color 3	2x clearly defined to slightly diffused + 6x N/A
5.4 Petal: border of color 4	1x moderately diffused + 7x N/A

Phalaenopsis Exercise 2: 'Lisbon' approach	NOTE
Characteristic	variety 2
1.1 Petal: color 1	1x white + 7x purplish
1.2 Petal: color 2	3x purple + 5x white
1.3 Petal: color 3	2x purple + 6x N/A
1.4 Petal: color 4	1x white + 7x N/A
2.1 Petal: area of color 1	3x small + 5x large
2.2 Petal: area of color 2	5x small + 1x medium + 2x large
2.3 Petal: area of color 3	2x very small + 6x N/A
2.4 Petal: area of color 4	1x very small to small + 7x N/A
3.1(a) Petal: distribution_color 1	5x centre + 1x scattered + 1x base and margin + 1x??
3.1(b) Petal: distribution_color 1	2x type 1-1:2 + 3x type 1-1:6 + 2x 1-1:5 + 1x ??
3.2(a) Petal: distribution_color 2	2x at centre + 3x at margin + 1x scattered + 2x margin and base
3.2(b) Petal: distribution_color 2	2x type 1-1:6 + 3x type 1-1:2 + 1x type 1-1:1 and 1-2:8 + 1x ??
3.3(a) Petal: distribution_color 3	6x N/A + 2x scattered
3.3(b) Petal: distribution_color 3	6x N/A + 1x type 1-1:6 + 1x ??
3.4(a) Petal: distribution_color 4	7x N/A + 1x at margin
3.4(b) Petal: distribution_color 4	7x N/A + 1x type 1-1:6
4.1 Petal: shape of color 1	5x continuously dispersed + 2x shaded + 1x netted
4.2 Petal: shape of color 2	6x continuously dispersed + 2x shaded
4.3 Petal: shape of color 3	6x N/A + 1x shaded + 1x netted
4.4 Petal: shape of color 4	7x N/A + 1x continuously dispersed
5.1 Petal: border of color 1	6x moderately diffused + 2x slightly diffused
5.2 Petal: border of color 2	5x moderately diffused + 2x slightly diffused + 1x clearly defined
5.3 Petal: border of color 3	6x N/A + 1x clearly defined + 1x moderately/strongly diffused
5.4 Petal: border of color 4	7x N/A + 1x slightly diffused

Phalaenopsis Exercise 2: 'Lisbon' approach	NOTE
	variety 3
1.1 Petal: color 1	8x Violet/purple
1.2 Petal: color 2	4x white + 4x purple
1.3 Petal: color 3	6x N/A + 2x light violet
1.4 Petal: color 4	7x N/A + 1x light violet
2.1 Petal: area of color 1	3x very small/small + 5x large
2.2 Petal: area of color 2	6x small/very small + 1x medium + 1x large
2.3 Petal: area of color 3	6x N/A + 1x small + 1x medium
2.4 Petal: area of color 4	7x N/A + 1x small
3.1(a) Petal: distribution_color 1	4x at centre + 3x scattered + 1x??
3.1(b) Petal: distribution_color 1	3x type 1-1:6 + 1x type 1-1:1 and 1-2:6 and 1-1:5 and 1-2:5
3.2(a) Petal: distribution_color 2	5x margin + 2x centre
3.2(b) Petal: distribution_color 2	2x type 1-1:6 + 1x type 1-1:1 and 1-1:2 and 1-2:5 and 1-2:2 and 1-2:1
3.3(a) Petal: distribution_color 3	6x N/A + 1x base/margin + 1x centre
3.3(b) Petal: distribution_color 3	6x N/A + 1x type 1-1:2 and 1x type 1-1:6
3.4(a) Petal: distribution_color 4	7x N/A + 1x margin
3.4(b) Petal: distribution_color 4	7x N/A + 1x type 1-1:2
4.1 Petal: shape of color 1	4x shaded + 2x spotted + 2x continuously dispersed
4.2 Petal: shape of color 2	5x continuously dispersed + 1x shaded + 1x netted + 1x spotted/netted
4.3 Petal: shape of color 3	6x N/A + 1x continuously dispersed + 1x shaded
4.4 Petal: shape of color 4	7x N/A + 1x continuously dispersed
5.1 Petal: border of color 1	6x moderately to strongly + 2x slightly diffused
5.2 Petal: border of color 2	5x moderately to strongly + 3x slightly diffused
5.3 Petal: border of color 3	6x N/A + 2x strongly diffused
5.4 Petal: border of color 4	7x N/A + 1x strongly diffused

Phalaenopsis Exercise 2: 'Lisbon' approach	NOTE
	variety 4
1.1 Petal: color 1	6x white/yellowish + 1x violet
1.2 Petal: color 2	3x white/yellowish + 4x purplish
1.3 Petal: color 3	2x N/A + 3x violet + 1x red/brown + 1x white
1.4 Petal: color 4	6x N/A + 1x white
2.1 Petal: area of color 1	2x small/very small + 5x large/very large
2.2 Petal: area of color 2	5x small/very small + 2x large/very large
2.3 Petal: area of color 3	2x N/A + 4x very small/small + 1x medium
2.4 Petal: area of color 4	6x N/A + 1x very small/small
3.1(a) Petal: distribution_color 1	4x scattered + 2x at base
3.1(b) Petal: distribution_color 1	2x type 1-2:3 + 1x 1-2:8 and 1-2:4 and 2-1:5
3.2(a) Petal: distribution_color 2	3x at base + 1x margin + 2x scattered
3.2(b) Petal: distribution_color 2	2x type 1-2:8 + 1x type 1-2:4 and 2-1:5 and 2-1:4 and 1-2:7
3.3(a) Petal: distribution_color 3	4x scattered
3.3(b) Petal: distribution_color 3	2x type 2-1:5 + 1x type 1-2:8 and 1x 1-1:B
3.4(a) Petal: distribution_color 4	1x at base
3.4(b) Petal: distribution_color 4	1x not appropriate type found
4.1 Petal: shape of color 1	5x continuously dispersed + 1x central band + 1x spotted
4.2 Petal: shape of color 2	4x continuously dispersed + 2x spotted
4.3 Petal: shape of color 3	4x spotted
4.4 Petal: shape of color 4	1x spotted
5.1 Petal: border of color 1	3x clearly defined + 1x slightly + 1x moderately + 1x strongly diffused
5.2 Petal: border of color 2	4x clearly defined + 1x slightly + 1x moderately diffused
5.3 Petal: border of color 3	4x clearly defined
5.4 Petal: border of color 4	1x moderately diffused

Phalaenopsis Exercise 2: 'Lisbon' approach	NOTE
	variety 5
1.1 Petal: color 1	3x white + 1x red + 2x yellow
1.2 Petal: color 2	4x red purple + 1x light purple + 1x white
1.3 Petal: color 3	2x red purple/purple + 1x white
1.4 Petal: color 4	N/A
2.1 Petal: area of color 1	1x very small + 5x very large
2.2 Petal: area of color 2	3x note 1, 1x note 2, 1x note 3, 1x note 8
2.3 Petal: area of color 3	3x very small
2.4 Petal: area of color 4	N/A
3.1(a) Petal: distribution_color 1	4x scattered + 1x margin + 1x??
3.1(b) Petal: distribution_color 1	3x type 1-1:4 + 1x type 1-2:3 + 1x ??
3.2(a) Petal: distribution_color 2	1x margin + 2x centre + 2x base + 1x ??
3.2(b) Petal: distribution_color 2	3x type 1-1:8 + 1x type 1-1:4 and 1-2:7
3.3(a) Petal: distribution_color 3	2x scattered + 1x centre
3.3(b) Petal: distribution_color 3	
3.4(a) Petal: distribution_color 4	N/A
3.4(b) Petal: distribution_color 4	N/A
4.1 Petal: shape of color 1	4x continuously dispersed + 1x spotted
4.2 Petal: shape of color 2	3x continuously dispersed + 2x spotted
4.3 Petal: shape of color 3	1x continuously dispersed + 1x spotted+ 1x shaded
4.4 Petal: shape of color 4	N/A
5.1 Petal: border of color 1	4x clearly defined + 1x slightly diffused
5.2 Petal: border of color 2	2x clearly defined + 3x slightly diffused
5.3 Petal: border of color 3	2x clearly defined
5.4 Petal: border of color 4	N/A

Phalaenopsis Exercise 2: 'Lisbon' approach	NOTE
	variety 6
0,3	3x white + 4x red purple/purple
1.2 Petal: color 2	4x white + 3x red purple/purple
1.3 Petal: color 3	1x dark purple red
1.4 Petal: color 4	N/A
2.1 Petal: area of color 1	3x very small + 4x medium
2.2 Petal: area of color 2	1x small + 3x medium + 3x very large
2.3 Petal: area of color 3	1x small
2.4 Petal: area of color 4	N/A
3.1(a) Petal: distribution_color 1	3x scattered + 3x centre
3.1(b) Petal: distribution_color 1	2x type 1-1:6 and 1-1:8 + 1x type B + 1x??
3.2(a) Petal: distribution_color 2	5x scattered + 1x margin
3.2(b) Petal: distribution_color 2	2x type 1-1:2 and 1-1:4 + 1x type 1-1:6 + 1x??
3.3(a) Petal: distribution_color 3	1x scattered
3.3(b) Petal: distribution_color 3	1x type 1-1:6
3.4(a) Petal: distribution_color 4	N/A
3.4(b) Petal: distribution_color 4	N/A
4.1 Petal: shape of color 1	3x continuously dispersed + 4x spotted
4.2 Petal: shape of color 2	4x continuously dispersed + 3x spotted + 1x shaded/spotted
4.3 Petal: shape of color 3	1x shaded
4.4 Petal: shape of color 4	N/A
5.1 Petal: border of color 1	5x clearly defined + 1x slightly diffused + 1x moderately diffused
5.2 Petal: border of color 2	4x clearly defined + 2x slightly diffused + 1x moderately diffused
5.3 Petal: border of color 3	1x clearly defined
5.4 Petal: border of color 4	N/A

Phalaenopsis Exercise 2: 'Lisbon' approach	NOTE
	variety 7
1.1 Petal: color 1	6x red purple + 1x white
1.2 Petal: color 2	2x white + 2x light purple + 2x dark purple
1.3 Petal: color 3	1x light purple + 1x white
1.4 Petal: color 4	N/A
2.1 Petal: area of color 1	1x small + 3x medium + 3x large
2.2 Petal: area of color 2	1x very small + 4x small + 1x medium + 1x large
2.3 Petal: area of color 3	1x small + 1x medium
2.4 Petal: area of color 4	N/A
3.1(a) Petal: distribution_color 1	4x scattered + 1x margin + 1x base/centre
3.1(b) Petal: distribution_color 1	1x type 1-1:3 and 1-1:B and 1-2:5 and 1-2:6 + 2x??
3.2(a) Petal: distribution_color 2	4x scattered + 1x margin + 1x centre
3.2(b) Petal: distribution_color 2	2x type 1-1:B + 1x type 1-1:7 and 1-2:2 + 2??
3.3(a) Petal: distribution_color 3	2x scattered
3.3(b) Petal: distribution_color 3	2x type 1-1:B
3.4(a) Petal: distribution_color 4	N/A
3.4(b) Petal: distribution_color 4	N/A
4.1 Petal: shape of color 1	4x spotted + 1x continuously dispersed + 1x shaded/spotted
4.2 Petal: shape of color 2	2x continuously dispersed + 1x spotted + 2x netted + 1x spotted/netted
4.3 Petal: shape of color 3	1x netted
4.4 Petal: shape of color 4	N/A
5.1 Petal: border of color 1	2x clearly defined + 3x slightly diffused + 1x moderately diffused
5.2 Petal: border of color 2	3x clearly defined + 2x slightly diffused + 1x moderately diffused
5.3 Petal: border of color 3	1x clearly defined
5.4 Petal: border of color 4	N/A

Phalaenopsis Exercise 2: 'Lisbon' approach	NOTE
	variety 8
1.1 Petal: color 1	6x yellow + 1x red
1.2 Petal: color 2	5x red + 1x yellowish + 1x white
1.3 Petal: color 3	1x red purple + 1x light purple + 1x white
1.4 Petal: color 4	1x purple
2.1 Petal: area of color 1	4x small + 3x medium
2.2 Petal: area of color 2	1x small + 3x medium + 3x large
2.3 Petal: area of color 3	2x very small
2.4 Petal: area of color 4	1x very small
3.1(a) Petal: distribution_color 1	5c scattered + 1x base/margin + 1x??
3.1(b) Petal: distribution_color 1	2x type 1-2:4 + 1x 2-1:2 + 3x??
3.2(a) Petal: distribution_color 2	5c scattered + 1x centre/scattered + 1x??
3.2(b) Petal: distribution_color 2	2x type 1-2:4 + 1x type 1-2:8 and B + 2x??
3.3(a) Petal: distribution_color 3	2x base
3.3(b) Petal: distribution_color 3	2x type 1-2:8 + 1x type 1-2:B
3.4(a) Petal: distribution_color 4	1x base
3.4(b) Petal: distribution_color 4	1x type 1-2:8
4.1 Petal: shape of color 1	2x continuously dispersed + 2x netted + 2x spotted/netted
4.2 Petal: shape of color 2	3x continuously dispersed + 2x shaded/spotted + 1x spotted/striped/shaded
4.3 Petal: shape of color 3	N/A
4.4 Petal: shape of color 4	2x continuously dispersed + 1x striped/netted
5.1 Petal: border of color 1	4x clearly defined + 2x slightly diffused
5.2 Petal: border of color 2	5x clearly defined + 1x slightly diffused
5.3 Petal: border of color 3	2x slightly diffused
5.4 Petal: border of color 4	N/A

[Annex III follows]

ALSTROEMERIA: SUMMARY OF EXERCISE 1: 'TG' APPROACH

Alstroemeria TG Approach	NOTE	NOTE
characteristic	Variety 1	Variety 2
12. Outer tepal: main color of <u>central</u> zone	7x purple red	7x purplish colors
13. Outer tepal: main color of <u>top</u> zone (green tip excluded)	5x greenish + 2x pinkish	5x greenish + 2x pinkish
14. Outer tepal: main color of <u>lateral</u> zone	4x light pink + 3x white	5x light colors + 2x dark violet
15. Outer tepal: main color of <u>basal</u> zone	5x light pink + 2x white	5x red purple colors + 1x light pink
16. Outer tepal: very small or small stripes on marginal part of lateral zone of upper side of blade	7x absent	5x absent + 2x present
17. Outer tepal: large or very large stripes on upper side of blade (marginal zone excluded)	7x absent	3x absent + 4x present
18. Outer tepal: number of large or very large stripes on upper side of blade (marginal zone excluded)	7x N/A	2x N/A + 4x many + 1x medium
	NOTE	NOTE
	Variety 3	Variety 4
12. Outer tepal: main color of <u>central</u> zone	4x orange + 2x light red/pinkish	5x orange/brownish
13. Outer tepal: main color of <u>top</u> zone (green tip excluded)	4x orange + 2x light red/pinkish	4x white + 1x light pink
14. Outer tepal: main color of <u>lateral</u> zone	3x orange + 2x yellowish + 1x orange and yellow	5x light pinkish
15. Outer tepal: main color of <u>basal</u> zone	6x light orange	5x light pinkish
16. Outer tepal: very small or small stripes on marginal part of lateral zone of upper side of blade	6x absent	5x absent
17. Outer tepal: large or very large stripes on upper side of blade (marginal zone excluded)	4x absent + 2x present	5x absent
18. Outer tepal: number of large or very large stripes on upper side of blade (marginal zone excluded)	4x N/A + 2x very few	5x N/A

Astroemeria	TG Approach NOTE	NOTE
Characteristic	Variety 5	Variety 6
12. Outer tepal: main color of <u>central</u> zone	2x yellow + 1x orange + 2x yellow and orange	5x red purple
13. Outer tepal: main color of <u>top</u> zone (green tip excluded)	5x pink/purple colors	4x light yellow + 1x light pink
14. Outer tepal: main color of <u>lateral</u> zone	5x yellow	5x light yellow
15. Outer tepal: main color of <u>basal</u> zone	5x yellow	5x yellow
16. Outer tepal: very small or small stripes on marginal part of lateral zone of upper side of blade	5x absent	5x absent
17. Outer tepal: large or very large stripes on upper side of blade (marginal zone excluded)	5x absent	5x absent
18. Outer tepal: number of large or very large stripes on upper side of blade (marginal zone excluded)	5x N/A	5x N/A
	NOTE	NOTE
	Variety 7	Variety 8
12. Outer tepal: main color of <u>central</u> zone	5x purple/violet	5x orange red
13. Outer tepal: main color of <u>top</u> zone (green tip excluded)	4x purple + 1x green grey	5x orange red
14. Outer tepal: main color of <u>lateral</u> zone	5x purple/violet	5x orange red
15. Outer tepal: main color of <u>basal</u> zone	5x purple/violet	5x orange red
16. Outer tepal: very small or small stripes on marginal part of lateral zone of upper side of blade	5x absent	5x absent
17. Outer tepal: large or very large stripes on upper side of blade (marginal zone excluded)	2x absent + 3x present	5x absent
18. Outer tepal: number of large or very large stripes on upper side of blade (marginal zone excluded)	2x N/A + 3x few	5x N/A

Alstroemeria TG Approach	NOTE	NOTE
Characteristic	Variety 9	Variety 10
12. Outer tepal: main color of <u>central</u> zone	5x dark red purple	5x red
13. Outer tepal: main color of <u>top</u> zone (green tip excluded)	5x dark red purple	5x red
14. Outer tepal: main color of <u>lateral</u> zone	5x dark red purple	5x red
15. Outer tepal: main color of <u>basal</u> zone	5x dark red purple	5x red
16. Outer tepal: very small or small stripes on marginal part of lateral zone of upper side of blade	5x absent	5x absent
17. Outer tepal: large or very large stripes on upper side of blade (marginal zone excluded)	5x absent	5x absent
18. Outer tepal: number of large or very large stripes on upper side of blade (marginal zone excluded)	5x N/A	5x N/A
	NOTE	NOTE
	Variety 11	Variety 12
12. Outer tepal: main color of <u>central</u> zone	5x orange/red	5x red
13. Outer tepal: main color of <u>top</u> zone (green tip excluded)	5x orange/red	5x red
14. Outer tepal: main color of <u>lateral</u> zone	5x orange/red	5x red
15. Outer tepal: main color of <u>basal</u> zone	5x orange/red	5x red
16. Outer tepal: very small or small stripes on marginal part of lateral zone of upper side of blade	5x absent	5x present
17. Outer tepal: large or very large stripes on upper side of blade (marginal zone excluded)	5x absent	4x present + 1x absent
18. Outer tepal: number of large or very large stripes on upper side of blade (marginal zone excluded)	5x N/A	4x few + 1x N/A

[Annex IV follows]

ALSTROEMERIA: SUMMARY OF EXERCISE 2: 'LISBON' APPROACH

Alstroemeria Exercise 2: 'Lisbon' approach	NOTE	NOTE
Characteristic	variety 1	variety 2
1.1 Outer tepal: color 1	5x red purple + 2x light red purple	4x medium red purple + 3x dark red purple
1.2 Outer tepal: color 2	2x red purple + 3x light red purple + 2x greenish	4x medium red purple + 2x dark red purple + 1x light red purple
1.3 Outer tepal: color 3	2x pinkish + 2x greenish + 2x white + 1x ?? (RHS color does not exist)	2x dark red purple + 2x light red purple + 3x greenish
1.4 Outer tepal: color 4	6x N/A + 1x white	
2.1 Outer tepal: area of color 1	6x medium + 1x very small	5x small/medium + 2x medium/large
2.2 Outer tepal: area of color 2	3x medium + 4x very small	3x very small + 2x small + 1x medium + 1x??
2.3 Outer tepal: area of color 3	3x medium + 4x very small	3x very small + 3x small + 1x??
2.4 Outer tepal: area of color 4	6x N/A + 1x very small	2x very small + 3x small
3.1(a) Outer tepal: distribution color 1	5x at centre + 2x at base	4x center + 1x margin + 1x base/center + 1x top/margin
3.1(b) Outer tepal: distribution color 1	4x type 1-1:7 + 1x type 1-1:8 and 1-1:3	3x type 1-1:7 + 1x type 1-2:6 and 3-2:2 and 1-2:6
3.2(a) Outer tepal: distribution color 2	2x top + 2x base + 1x center + 1x margin + 1x top/margin	4x margin + 3x base
3.2(b) Outer tepal: distribution color 2	1x type 1-1:7 and 1-2:8 and 2-1:10 and 1-1:3 and 2-1:9 and 2-1:2	2x type 3-2:2 + 2x type 1-2:2 + 1x type 1-2:8 and 1-2:6
3.3(a) Outer tepal: distribution color 3	3x at top + 3x at margin + 1x centre	3x top + 1x base + 2x margin + 1x centre
3.3(b) Outer tepal: distribution color 3	3x type 2-1:10 + 1x type 3-2:2 and 1-1:3 and 1-1:2	1x type 1-2:8 and 3-2:2 and 2-1:10 and 1-2:3 and 2-1:9 and 2-1:10
3.4(a) Outer tepal: distribution color 4	6x N/A + 1x at margin	3x scattered + 2x top + 1x margin
3.4(b) Outer tepal: distribution color 4	6x N/A + 1x type 1-1:3	2x type 2-1:10 + 1x type 3-2:8 and 3-2:2 and 1-1:3
4.1 Outer tepal: shape of color 1	7x continuously dispersed	4x continuously dispersed + 2x shaded + 1x striped
4.2 Outer tepal: shape of color 2	4x continuously dispersed + 2x shaded + 1x spotted	2x continuously dispersed + 2x shaded + 3x striped
4.3 Outer tepal: shape of color 3	3x continuously dispersed + 2x shaded + 1x spotted	5x shaded + 1x continuously dispersed + 1x ? Shaded or continuously dispersed
4.4 Outer tepal: shape of color 4	6x N/A + 1x continuously dispersed (not over whole organ)	1x continuously dispersed + 1x shaded + 3x striped
5.1 Outer tepal: border of color 1	7x clearly defined/slightly diffused	2x clearly defined + 2x slightly diffused + 2x moderately diffused + 1x strongly diffused
5.2 Outer tepal: border of color 2	3x clearly defined + 2x slightly diffused + 1x strongly diffused + 1x clearly defined and strongly diffused (different parts)	3x clearly defined + 1x slightly diffused + 3x moderately diffused
5.3 Outer tepal: border of color 3	6x clearly defined + 1x strongly diffused	3x clearly defined + 2x slightly diffused + 1x moderately diffused + 1x strongly diffused
5.4 Outer tepal: border of color 4	6x N/A + 1x strongly diffused	3x clearly defined + 1x strongly diffused

Alstroemeria Exercise 2: 'Lisbon' approach	NOTE	NOTE
Characteristic	variety 3	variety 4
1.1 Outer tepal: color 1	3x yellow + 3x yellow orange	4x orange red + 1x light pink
1.2 Outer tepal: color 2	6x orange	3x orange red + 2x light pink
1.3 Outer tepal: color 3	4x orange + 2x pink red	4x orange red + 1x greenish
1.4 Outer tepal: color 4	2x brown + 2x purple + 1x orange	4x white
2.1 Outer tepal: area of color 1	1x very small + 3x small + 1x medium/large + 1x??	3x small + 1x small/medium + 1x medium/large
2.2 Outer tepal: area of color 2	1x very small + 2x small + 2x medium/large + 1x??	2x very small + 3x medium
2.3 Outer tepal: area of color 3	4x small + 1x medium/large + 1x??	2x very small + 2x medium
2.4 Outer tepal: area of color 4	3x very small + 2x ??	4x very small
3.1(a) Outer tepal: distribution color 1	3x margin + 1x base + 2x scattered	4x centre + 1x margin
3.1(b) Outer tepal: distribution color 1	1x type 3-2:2 and 2-1:2 + rest ???	4x type 1-1:7
3.2(a) Outer tepal: distribution color 2	3x base + 1x center + 1x margin + 1x scattered	2x base + 2x margin + 1x centre
3.2(b) Outer tepal: distribution color 2	1x type 1-1:7 and 1-2:7 and 1-2:8 + 3x??	2x type 1-2:8 + 1x type 3-2:2 and 1-1:3
3.3(a) Outer tepal: distribution color 3	3x top + 2x centre + 1x centre/top	2x margin + 1x base + 1x top
3.3(b) Outer tepal: distribution color 3	1x type 1-2:8 and 1-1:7 and 1-2:6(opposit) + 2x??	1x type 1-2:8 and 3-2:2 and 1-1:3 and 2-1:10
3.4(a) Outer tepal: distribution color 4	3x base + 1x top	4x top
3.4(b) Outer tepal: distribution color 4	1x type 3-2:2 and 3-2:1 and 1-2:7	1x type 1-2:8 and 2-1:10 and 2-1:9 and 2-1:4
4.1 Outer tepal: shape of color 1	4x shaded + 2x continuously dispersed	5x continuously dispersed
4.2 Outer tepal: shape of color 2	6x shaded	3x continuously dispersed + 2x shaded
4.3 Outer tepal: shape of color 3	5x shaded + 1x continuously dispersed	1x continuously dispersed + 2x shaded + 1x spotted
4.4 Outer tepal: shape of color 4	3x shaded + 1x continuously dispersed + 2x striped	3x continuously dispersed+ 1x spotted
5.1 Outer tepal: border of color 1	3x moderately diffused + 3x strongly diffused	3x clearly defined + 1x slightly diffused + 1x clearly defined/moderately diffused
5.2 Outer tepal: border of color 2	3x moderately diffused + 3x strongly diffused	2x clearly defined + 2x slightly diffused + 1x strongly diffused
5.3 Outer tepal: border of color 3	1x slightly diffused + 3x moderately diffused + 2x strongly diffused	2x clearly defined + 2x slightly diffused
5.4 Outer tepal: border of color 4	3x clearly defined + 1x moderately diffused + 1x strongly diffused	1x clearly defined + 1x slightly diffused + 1x moderately diffused + 1x strongly diffused

Alstroemeria Exercise 2: 'Lisbon' approach	NOTE	NOTE
Characteristic	variety 5	variety 6
1.1 Outer tepal: color 1	5x yellow	5x yellow
1.2 Outer tepal: color 2	2x yellow + 3x orange	3x yellow + 2x pinkish
1.3 Outer tepal: color 3	1x yellow + 1x yellow orange + 2x purple	2x pink + 1x light pink + 1x greenish
1.4 Outer tepal: color 4	1x orange + 1x pink + 1x greenish	1x reyed purple
2.1 Outer tepal: area of color 1	4x large/very large + 1x very small to small	2x very small/small + 1x medium + 2x large
2.2 Outer tepal: area of color 2	4x very small + 1x medium	3x very small/small + 2x medium
2.3 Outer tepal: area of color 3	5x very small	2x very small + 2x small
2.4 Outer tepal: area of color 4	3x very small	1x very small/small
3.1(a) Outer tepal: distribution color 1	2x scattered + 2x margin + 1x centre	1x scattered + 2x base + 2x margin
3.1(b) Outer tepal: distribution color 1	1x type 1-2:4 and 3-2:2 and 1-1:4 + 1x??	2x type 1-1:3 + 2x type 1-2:7
3.2(a) Outer tepal: distribution color 2	3x centre + 1x top + 1x margin	2x centre + 2x margin + 1x base
3.2(b) Outer tepal: distribution color 2	3x type 1-1:8 + 1x type 1-2:8	2x type 1-1:7 + 1x type 1-2:2 and 1-1:3
3.3(a) Outer tepal: distribution color 3	2x top + 2x base	2x centre + 2x top
3.3(b) Outer tepal: distribution color 3	1x type 1-2:8 and 2-1:4 + 1x??	2x type 1-1:7 + 1x type 2-1:10
3.4(a) Outer tepal: distribution color 4	4x top	1x centre
3.4(b) Outer tepal: distribution color 4	2x??	no score
4.1 Outer tepal: shape of color 1	3x continuously dispersed + 2x shaded	3x continuously dispersed + 2x shaded
4.2 Outer tepal: shape of color 2	1x continuously dispersed + 3x shaded + 1x spotted	3x continuously dispersed + 2x shaded
4.3 Outer tepal: shape of color 3	3x shaded + 1x spotted	2x continuously dispersed + 2x shaded
4.4 Outer tepal: shape of color 4	1x continuously dispersed + 1x shaded + 1x spotted	1x shaded
5.1 Outer tepal: border of color 1	1x clearly defined + 2x slightly diffused + 2x strongly diffused	1x clearly defined + 3x slightly diffused + 1x??
5.2 Outer tepal: border of color 2	2x slightly diffused + 3x strongly diffused	1x clearly defined + 1x slightly diffused + 1x moderately diffused + 1x strongly diffused + 1x??
5.3 Outer tepal: border of color 3	1x clearly defined + 1x slightly diffused + 2x moderately diffused + 1x strongly diffused	1x clearly defined + 2x slightly diffused + 1x moderately diffused
5.4 Outer tepal: border of color 4	1x clearly defined + 1x slightly diffused + 1x moderately diffused + 1x strongly diffused	1x moderately diffused

Alstroemeria Exercise 2: 'Lisbon' approach	NOTE	NOTE
Characteristic	variety 7	variety 8
1.1 Outer tepal: color 1	3x light blue pink + 2x purple	5x orange red
1.2 Outer tepal: color 2	3x light blue pink + 2x purple	3x pinkish + 1x greenish
1.3 Outer tepal: color 3	2x violet + 1x greenish	1x orange red + 1x red
1.4 Outer tepal: color 4	N/A	1x red
2.1 Outer tepal: area of color 1	3x very small/small + 2x large/very large	3x very small + 2x very large
2.2 Outer tepal: area of color 2	2x small + 3x large	1x very small + 1x small + 1x medium + 1x very large
2.3 Outer tepal: area of color 3	3x very small/small	1x very small + 1x small
2.4 Outer tepal: area of color 4	N/A	1x small
3.1(a) Outer tepal: distribution color 1	3x centre + 1x margin + 1x scattered	2x scattered + 1x margin + 1x centre + 1x top
3.1(b) Outer tepal: distribution color 1	1x type 1-1:3 and 1-1:4 and 1-1:7 + 1x??	2x type 1-1:B + 1x type 1-2:7 and 1-1:8
3.2(a) Outer tepal: distribution color 2	2x centre + 3x margin	2x margin + 1x centre + 1x top
3.2(b) Outer tepal: distribution color 2	1x type 1-1:3 and 1-1:7 and 1-1:8 + 1x??	1x type 1-1:7 and 1-1:4 and 2-1:10
3.3(a) Outer tepal: distribution color 3	2x top + 1x centre	1x base + 1x margin
3.3(b) Outer tepal: distribution color 3	1x type 2-1:10 + 1x??	1x type 3-2:2
3.4(a) Outer tepal: distribution color 4	N/A	1x centre
3.4(b) Outer tepal: distribution color 4	N/A	no score
4.1 Outer tepal: shape of color 1	3x continuously dispersed + 1x striped + 1x shade/stripe	1x continuously dispersed + 4x shaded
4.2 Outer tepal: shape of color 2	2x continuously dispersed + 2x shade + 1x shade/stripe	1x continuously dispersed + 2x shaded + 1x spotted
4.3 Outer tepal: shape of color 3	1x continuously dispersed + 2x shade	2x shaded
4.4 Outer tepal: shape of color 4	N/A	1x shaded
5.1 Outer tepal: border of color 1	1x clearly defined + 2x moderately diffused + 2x strongly diffused	2x moderately diffused + 2x strongly diffused + 1x??
5.2 Outer tepal: border of color 2	2x moderately diffused + 2x strongly diffused + 1x??	1x clearly defined + 1x moderately diffused + 2x strongly diffused
5.3 Outer tepal: border of color 3	1x moderately diffused + 2x strongly diffused	2x strongly diffused
5.4 Outer tepal: border of color 4		1x strongly diffused

Alstroemeria Exercise 2: 'Lisbon' approach	NOTE	NOTE
Characteristic	variety 9	variety 10
1.1 Outer tepal: color 1	5x red purple	5x red
1.2 Outer tepal: color 2	4x red purple	1x red
1.3 Outer tepal: color 3	1x red purple	
1.4 Outer tepal: color 4	N/A	
2.1 Outer tepal: area of color 1	3x very small + 2x very large	1x large + 4x very large
2.2 Outer tepal: area of color 2	2x very small + 2x very large	1x small
2.3 Outer tepal: area of color 3	1x large	N/A
2.4 Outer tepal: area of color 4	N/A	N/A
3.1(a) Outer tepal: distribution color 1	2x scattered + 1x scattered except top + 2x top	4x scattered + 1x centre
3.1(b) Outer tepal: distribution color 1	1x type 1-2:3 and 2-1:10 and 2-1:9 and 1-1:3	2x type 1-1:B + 1x type 1-2:6 + 1x ??
3.2(a) Outer tepal: distribution color 2	1x scattered + 1x top + 1x base + 1x centre	1x margin
3.2(b) Outer tepal: distribution color 2	1x type 1-2:7 and 1-2:8 and 2-1:4 and 1-1:7	1x type 1-2:2
3.3(a) Outer tepal: distribution color 3	1x centre	N/A
3.3(b) Outer tepal: distribution color 3	no score	N/A
3.4(a) Outer tepal: distribution color 4	N/A	N/A
3.4(b) Outer tepal: distribution color 4	N/A	N/A
4.1 Outer tepal: shape of color 1	3x continuously dispersed + 1x shaded	3x continuously dispersed + 2x shaded
4.2 Outer tepal: shape of color 2	2x continuously dispersed + 1x shaded/striped	1x shaded
4.3 Outer tepal: shape of color 3	1x continuously dispersed	N/A
4.4 Outer tepal: shape of color 4	N/A	N/A
5.1 Outer tepal: border of color 1	3x moderately diffused + 1x strongly diffused	2x moderately diffused + 1x clearly defined + 1x ??
5.2 Outer tepal: border of color 2	2x clearly defined + 1x moderately diffused + 1x strongly diffused	1x moderately diffused
5.3 Outer tepal: border of color 3	1x??	N/A
5.4 Outer tepal: border of color 4	N/A	N/A

Alstroemeria Exercise 2: 'Lisbon' approach	NOTE	NOTE
characteristic	variety 11	variety 12
1.1 Outer tepal: color 1	5x orange	5x red
1.2 Outer tepal: color 2	3x orange + 2x red	4x brownish
1.3 Outer tepal: color 3	1x orange + 1x orange red	1x brown
1.4 Outer tepal: color 4	N/A	N/A
2.1 Outer tepal: area of color 1	1x small + 4x large	5x large/very large
2.2 Outer tepal: area of color 2	3x very small + 2x small	4x very small
2.3 Outer tepal: area of color 3	1x very small + 1x large	1x very small
2.4 Outer tepal: area of color 4	N/A	N/A
3.1(a) Outer tepal: distribution color 1	1x centre + 3x margin + 1x top	5x scattered
3.1(b) Outer tepal: distribution color 1	3x type 1-1:3 + 1x 1-1:7	2x type 1-1:B + 2x ??
3.2(a) Outer tepal: distribution color 2	3x centre + 1x margin + 1x top	2x base + 1x margin + 1x centre/base
3.2(b) Outer tepal: distribution color 2	3x type 1-1:3 + 1x 3-2:2	2x type 1-2:7+ 1x type 3-2 + 1x??
3.3(a) Outer tepal: distribution color 3	1x centre + 1x top	1x centre
3.3(b) Outer tepal: distribution color 3	1x type 1-2:7	1x type 1-2:7
3.4(a) Outer tepal: distribution color 4	N/A	N/A
3.4(b) Outer tepal: distribution color 4	N/A	N/A
4.1 Outer tepal: shape of color 1	2x continuously dispersed + 3x shaded	5x continuously dispersed
4.2 Outer tepal: shape of color 2	1x continuously dispersed + 3x shaded + 1x striped/shaded	3x striped + 1x shaded/striped
4.3 Outer tepal: shape of color 3	1x continuously dispersed + 1x shaded	1x striped
4.4 Outer tepal: shape of color 4	N/A	N/A
5.1 Outer tepal: border of color 1	1x slightly diffused + 1x moderately diffused + 3x strongly diffused	3x clearly defined + 1x diffused
5.2 Outer tepal: border of color 2	1x slightly diffused + 1x moderately diffused + 3x strongly diffused	3x clearly defined + 1x diffused
5.3 Outer tepal: border of color 3	2x strongly diffused	1x clearly defined
5.4 Outer tepal: border of color 4	N/A	N/A

[Annex V follows]

CANNA: SUMMARY OF EXERCISE 1: 'TG' APPROACH

Canna TG Approach	NOTE	NOTE
Characteristic	Variety 1	Variety 2
18. Staminode: number of colors	9x two colors	7x two colors and 1x more than 2
19. Staminode: ground color	6x red colors + 3x yellow colors	In general yellow or orange like
20. Staminode: flush	8x absent and 1x present	4x absent and 3x present
21. Staminode: color of flush	8x N/A and 1x score 4	4x N/A and 3x score 3 (yellow orange) with remark that color orange is missing in the table
22. Staminode: stripes	9x absent	3x present and 4x absent
23. Staminode: color of stripes	9x N/A	2x red; 1x yellow orange and 4x N/A
24. Staminode: blotch	8x absent and 1x present	5x absent; 1x present; 1x present?
25. Staminode: color of blotch	8x N/A and 1x score 4 (red)	5x N/A.; 2x yellow orange (with remark that orange is missing)
26. Staminode: marginal zone	9x present	6x present and 2x absent
27. Staminode: color of marginal zone	yellow or yellowish white	yellow (when scored present)

[Annex VI follows]

CANNA: SUMMARY OF EXERCISE 2: 'LISBON' APPROACH

Canna Exercise 2: 'Lisbon' approach	Note	Note
Characteristic	Variety 1	Variety 2
1.1 Staminode: color 1	9x yellow	yellow and orange
1.2 Staminode: color 2	9x red	orange and brownish
1.3 Staminode: color 3	9x N/A	7x N/A + 1x red + 1x orange
1.4 Staminode: color 4	9x N/A	9x N/A
2.1 Staminode: area of color 1	7x score 1 + 2x score 2	yellow color judged as about 20% and orange color about 80%
2.2 Staminode: area of color 2	6x score 9 + 3x score 8	see also 2,1
2.3 Staminode: area of color 3	9x N/A	1x small
2.4 Staminode: area of color 4	9x N/A	9x N/A
3.1(a) Staminode: distribution color 1	8x at margin + 1x at top	Due to the fact that CDN has swapped color 1 and 2 it is diverging from here
3.1(b) Staminode: distribution color 1	5x type 1-2:1 + 2x type 1-1:1 + 1x type 2-1:1	as for 3.1 (a)
3.2(a) Staminode: distribution color 2	2x at base + 1x at centre + 2x scattered	as for 3.1 (a)
3.2(b) Staminode: distribution color 2	4x type 1-2:5 + 1x type 1-1:5	as for 3.1 (a)
3.3(a) Staminode: distribution color 3	N/A	as for 3.1 (a)
3.3(b) Staminode: distribution color 3	N/A	as for 3.1 (a)
3.4(a) Staminode: distribution color 4	N/A	as for 3.1 (a)
3.4(b) Staminode: distribution color 4	N/A	as for 3.1 (a)
4.1 Staminode: shape of color 1	4x continuously dispersed + 1x shaded	as for 3.1 (a)
4.2 Staminode: shape of color 2	5x continuously dispersed	as for 3.1 (a)
4.3 Staminode: shape of color 3	N/A	as for 3.1 (a)
4.4 Staminode: shape of color 4	N/A	as for 3.1 (a)
5.1 Staminode: border of color 1	5x clearly defined to slightly diffused	as for 3.1 (a)
5.2 Staminode: border of color 2	5x clearly defined to slightly diffused	as for 3.1 (a)
5.3 Staminode: border of color 3	N/A	as for 3.1 (a)
5.4 Staminode: border of color 4	N/A	as for 3.1 (a)

[Annex VII follows]

COMMENTS SENT BY PARTICIPANTS

Comments sent by Australia

Generally, from the exercise it seems aspects of the Lisbon approach are somewhat onerous without necessarily adding value or certainty to the assessment of DUS. In many cases there is the potential to create uniformity issues as it attempts to be too precise when in reality color markings are rarely exactly the same in all samples. There is difficulty in applying one approach to all situations. A system of describing colors needs to provide flexibility. Each test guideline should determine an approach suited to the species concerned taking into consideration such factors as importance of number of colors, their area and distribution as well as other factors such as the uniformity of the phenotypic variation within these characteristics. For many species such precision will not be necessary to clearly distinguish varieties, in others it will not even be possible as the striping/blotches/spots etc will be more random in their distribution/size etc.

Overall more consideration is needed of how a systematic system of describing colors and patterns etc could be used. The Japanese Chart reference could be quite useful in some circumstances. There are already some TG's that use a similar approach, albeit in a much condensed form (e.g. leaf markings in the Subterranean Clover TG). Again it should be a case-by-case approach.

Note: The RHS color chart references given in the spreadsheets should be taken as indicative for the purpose of this exercise.

Comments sent by Canada

In our office we decided to try to complete the exercise as a group.

Often, even within one office there can be different interpretations of characteristics and states of expression, so we thought we would try to do these descriptions together and that way we could compare (as a group) the traditional vs the "Lisbon" approach for color descriptions.

This exercise was extremely time consuming and took us several days even to get this far! There was a lot of discussion and I can tell you that with 6 examiners around the table, even some with many years experience, we did not completely reach a consensus on several of these descriptions.

Overall our impression was that although the Lisbon method seems good in principle, it was very confusing and inadequate for capturing some important characteristics. The Japanese color distribution scheme worked well in some cases but in others it was overly complicated and not very helpful.

We also had a lot of trouble with describing the "shape" of colors, for example in the phalaenopsis. For some varieties there wasn't a state of expression which suited some of the color patterns. Also, the decision of what is color 1, color 2 and so on is complicated when the basis of the decision is the RHS color number. Is 80A higher or lower than 80D? This was not made clear in the instructions. On most color cards the "A" colors are a deeper intensity than the "C" and "D". And we still had situations where some people thought that a lighter shade of the same hue was a different color, whereas some thought it was best described as

shading. Describing the borders between colors is rather vague also - sometimes it is clear but for some varieties it is very difficult.

Our impression was that although the new system seemed to make sense in theory, it is a different matter to put it into practice and we should be careful not to be introducing more opportunities for a lack of harmonization between examining offices - or, as we found, examiners within the same office.

In relation to *Alstroemeria*: My main comment is that, for this crop at least, the TG approach is much easier to complete. This is a relatively new guideline that our colleagues worked very hard on to try to ensure that it has good characteristics that would lead to more harmonized descriptions. And I think they succeeded. Defining various zones on the tepals makes a lot of sense for *Alstroemeria* and makes the job of assigning colors much simpler. As I noted in the description - the Lisbon approach fails to address the size and numbers of stripes that can occur in various locations on the tepals. And the Japanese distribution patterns, while very mathematical and impressive, are confusing to users and do not fit all possibilities.

Comments sent by Germany

General remark

With photos it is very difficult to assess the RHS-Color and to see whether the color is shaded or netted.

Phalaenopsis

TG Approach

For variety 1, 6, 7 and 8 it was difficult to decide which the main color is. This problem could be solved with using the term "ground color" and describing the patterns on this color. A good explanation which color to describe is necessary in the TG.

Lisbon Approach

In general much more difficult than the TG Approach. It would be easier if at first color 1 would be described totally and then color 2 and so on. It is difficult to assess how big the areas of the different colors are. It is very difficult to decide how the borders of the colors look like. The distribution of the colors is sometimes more complex than the Japanese Chart. Too many questions to describe the colors and their distribution. Very time consuming.

Alstroemeria

TG Approach

Easy to describe the colors in the different parts of the organ. Not clear what is meant by (marginal zone excluded) in char. 17.

Lisbon Approach

Much more difficult than the TG Approach. Stripes cannot be described as stripes with the Japanese Chart. Takes a long time to answer all questions. If the colors are described in too

much detail it is difficult to find exactly the same colors every year. It would be difficult to compare the variety description with other variety descriptions because the order of the colors follows the RHS Chart numbering and not the order of main color, secondary color and so on.

For both approaches: the problem remains to decide at which intensity a color is shaded or netted.

Additional general comment:

It was a very time consuming work with all these questions in the Lisbon Approach. Nevertheless I think it was a good exercise and for me it immediately became clear that the new approach is not practical and has many disadvantages.

Comments sent by Japan

We had made Variety description sheets on three kinds of ornamentals. It was very interested works for me and our colleagues.

But we had some difficulties to fill data in the each column of excel sheet on LISBON APPROACH, our comment on this work is as follows.

1. Sometime we had difficulty to recognize each color from Color 1 to Color 4, which are allocated according to the number of color charts, from observation of photographs, because color order of RHS Color Chart has no relation to the number of color. Especially in case of Alstroemeria, it has complicated situations of color distribution on outer tepal.
2. In case of '2.1-2.4: area of color' , 9 states are too fine to evaluate correctly, we hope to be coarse in states, for example (1:less than 25% , 2:25-50%, 3:50%, 4: 50-75%, 5:more than 75%).
3. On the Japanese chart ref. Type 1-2 was arranged color distribution and color area paid attention to basal part of organ, on the other hand, It is necessary to make other Type paid attention to top part of organ.

Comments sent by CIOPORA

We, as Phalaenopsis breeder, have been asked by CIOPORA International to perform this exercise. We have discussed the color exercise with our staff, which is involved in the breeding of this crop and have completed the color descriptions.

The 'new' TWO system will give more possibilities to describe combinations of color patterns, so that the flower can be described better. On the other hand will give the higher number of characteristic more room for inaccuracies, since this will give more room for different interpretations by the users.

How these inaccuracies will have influence on the judgement of instable chimaeras for uniformity remains unclear to our opinion. The new system of descriptions will be in general more complex, but will it give better results?

We are glad that we as breeder were able to contribute and are grateful for the initiative!

Summary of rest of comments in relation to this exercise: CIOPORA: in general they are worried that this system might lead to smaller minimum distances between varieties.

Comments sent by European Community (CPVO)

Comments CPVO-1 (expert 1)

I have the following general comments:

- it will be difficult to analyze the RHS numbers as given by the participants. The same picture observed from the screen and printouts from 2 different screens shows slightly different colors. I have only given indication on color groups
- it is not possible to assess reliably quantitative characteristics (e.g. Phalaenopsis number of spots, Alstroemeria number of large or very large spots) without an overview of the reference collection

In my opinion, the following points need attention in the Lisbon approach:

- order of colors
 - The RHS number is of paramount importance in order to set up the order of colors. In case of light colors (low brightness), it is difficult to define the RHS number and choosing one or the other can influence the ranking of that color if another color has a RHS number in the middle of the 2 reference numbers considered
 - The RHS number is not very appropriate where a color does not have a big surface area (e.g. spots or background to many spots)
 - In case of shaded colors, the new approach does not bring a solution to the observation. It might sometimes be difficult to observe the middle range, but the color with the largest uniform surface area instead
 - In order to define separate colors, the fact that they belong to two different groups should be a better definition than the fact that they belong to two color hues.
 - Less colors might be described because the number is limited to 4. In an approach where colors are described by zone of the organ, other colors can be described with possibilities for comments linked to each zone described
- Surface area
 - It is difficult to assess percentage of surface areas which are directly linked to notes in the new approach. Image analysis would help.
 - Surface areas are also difficult to assess in case the area is not continuous (spots, veins ...) and when it is affected by shadings
- Distribution of colors
 - The distribution cannot adequately be described with the 5 states of expression proposed. Combinations often apply. The Japanese chart gives and improvement as to the preciseness of the description, but not all situations are available. This chart could be developed in this respect but might end up in quite a complex solution if complete.
 - in the Japanese chart, Types A and B are always the same, whatever the type. Type A means that the color is absent. Is it possible to choose such a type?

- Shape of colors
 - Here again, more combinations of the stages of expression would be necessary.
 - In the new system, continuously dispersed might not be across the organ but part of it. A color might follow a distribution in a certain part of the organ and another one in another part
 - In the shape of color, it is not very clear whether only one color should be considered as continuously dispersed, with the example of ground color, or if this possibility is open for several colors.
- Border of colors
 - if a color has border with various other colors, this border might be clearly defined with some colors and diffused with other colors. The border might also be clearly defined at some places of the organ and strongly diffused at other places. It is therefore not always possible to have a clear state of expression

Finally, I think that there are two main issues:

- the description of the colors themselves, that can be rendered difficult with small surface area or non uniformity (shading, fading ...). The specific solutions proposed in the old approach seems to be most appropriate in addressing characteristics adapted to the situation: e.g. color group instead of RHS number in case of small surface area, adapted characteristics like 'intensity of green color'.
-
- The color distribution, that the new approach seems to better describe. In this respect, a picture annexed to the description is in my opinion by far the best solution. It might also be less work intensive than the observation of a (long) list of characteristics in this respect.

Comments CPVO-2

Please treat the colors as only indications for color groups (with the photos impossible to judge on the exact RHS numbers even if I was trying to attribute some numbers).

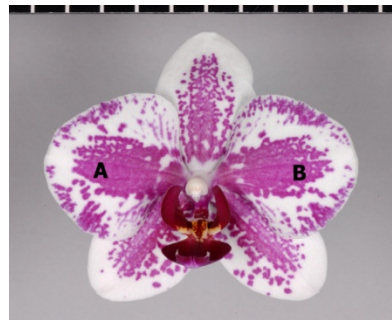
The 2nd difficulty for me was the lack of example varieties and lack of knowledge of the overall variation.

I found the Lisbon approach easier.

[Annex VIII]

EXERCISE: PHALAENOPSIS

Plant parts to be described



A, B: petals

Varieties to be described



Variety 1



Variety 2



Variety 3



Variety 4



Variety 5



Variety 6



Variety 7



Variety 8

[Annex IX follows]

EXERCISE: ALSTROEMERIA

Plant parts to be described



A, B: outer tepals

Varieties to be described



Variety 1



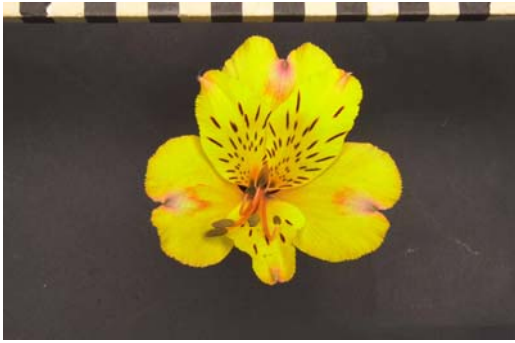
Variety 2



Variety 3



Variety 4



Variety 5



Variety 6



Variety 7



Variety 8



Variety 9



Variety 10



Variety 11



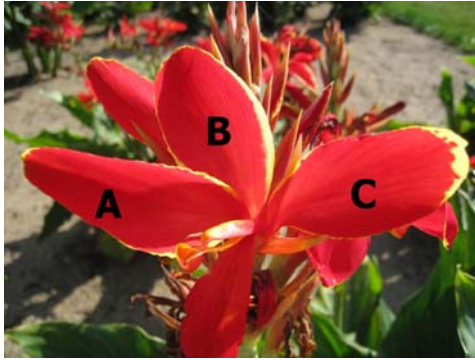
Variety 12

[Annex X follows]

EXERCISE: CANNA

Plant parts and varieties to be described

A, B, C: staminodes



Variety 1



Variety 2

[End of Annex X and of document]