

UPOV

TG/25/9(proj.5)
 ORIGINAL: English
 DATE: 2012-06-26

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

DIANTHUS

UPOV Code: **DIANT**

Dianthus L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from the Netherlands

to be considered by the

*Technical Working Party for Ornamental Plants and Forest Trees
 at its forty-fifth session, to be held in Jeju, Republic of Korea, from August 6 to 10, 2012*

Alternative Names:^{*}

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Dianthus</i> L.	Carnation, Clove Pink, Pink, Sweet William Carnation	Oeillet	Nelke	Clavel

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

^{*} These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Dianthus* L.

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of rooted cuttings.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

20 rooted cuttings.

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 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 it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 *Number of Growing Cycles*

The minimum duration of tests should normally be a single growing cycle.

3.2 *Testing Place*

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 "Examining Distinctness".

3.3 *Conditions for Conducting the Examination*

3.3.1 The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.3.2 In particular, it may be necessary for separate growing trials to be established for cut-flower types, garden types and pot types in order to ensure the satisfactory growth of varieties of those types.

3.3.3 *Observation of color by eye*

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. The color chart and version used should be specified in the variety description.

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 20 plants.

3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 *Additional Tests*

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 *Distinctness*

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.1.4 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants 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, disregarding any off-type plants.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the second column of the Table of Characteristics (see document TGP/9 "Examining Distinctness", Section 4 "Observation of characteristics"):

MG: single measurement of a group of plants or parts of plants

MS: measurement of a number of individual plants or parts of plants

VG: visual assessment by a single observation of a group of plants or parts of plants

VS: visual assessment by observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

"Visual" observation (V) is an observation made on the basis of the expert's judgment. For the purposes of this document, "visual" observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual

plants or parts of plants (S). In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

4.2 *Uniformity*

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 For the assessment of uniformity, a population standard of 1% and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 20 plants, 1 off-type is allowed.

4.3 *Stability*

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be further examined either by growing a further generation, or by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

- (a) Flower: type (characteristic 34)
- (b) Petal: main color (characteristic 48)
 - 1: white or near white
 - 2: green
 - 3: yellow
 - 4: orange
 - 5: pink
 - 6: pink purple
 - 7: red
 - 8: dark red
 - 9: violet
 - 10: violet red
 - 11: purple
 - 12: brownish

- (c) Varieties with more than one color only: Petal: secondary color (characteristic 49)
- 1: white or near white
 - 2: green
 - 3: yellow
 - 4: orange
 - 5: pink
 - 6: pink purple
 - 7: red
 - 8: dark red
 - 9: violet
 - 10: violet red
 - 11: purple
 - 12: brownish

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 “Examining Distinctness”.

6. Introduction to the Table of Characteristics

6.1 *Categories of Characteristics*

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 *States of Expression and Corresponding Notes*

6.2.1 States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.2.2 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	Note
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 "Development of Test Guidelines".

6.3 *Types of Expression*

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 *Example Varieties*

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

6.5 *Legend*

(*) Asterisked characteristic – see Chapter 6.1.2

QL Qualitative characteristic – see Chapter 6.3

QN Quantitative characteristic – see Chapter 6.3

PQ Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS – see Chapter 4.1.5

(a)-(f) See Explanations on the Table of Characteristics in Chapter 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8.2

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

	English	Français	Deutsch	Español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
1.	VG/ MG	Plant: length of stem					
(+)							
QN	(a)	short				3	
		medium			Fire Queen, Hilbacer	5	
		long			Fransesco, White Giant	7	
2.	VG	Plant: laterals without flower buds or flowers					
(+)							
QL	(a)	absent			Hilbreking	1	
		present			Martina, Tico Tico	9	
3.	VG/ MG	Stem: number of internodes between epicalyx and lowest node with laterals with flower buds or flowers					
PQ	(a)	one			Whatfield Can Can	1	
		two			Calypso Star	2	
		three			Devon Wizard	3	
		four			Scarlet Queen	4	
		more than four			Martina, Tico Tico	5	
4.	VG	Plant: laterals with flower buds or flowers of second order					
(+)							
QN	(a)	absent or very few			Barnita	1	
		few			Kledm10631	3	
		medium			Barocior, Weslupe	5	
		many			Kledm10629	7	
5.	VG	Plant: clustering on lateral branches					
(+)							
QL	(a)	none			Barnita, White Prestige	1	
		some			Beam Cherry, Martina	2	
		all			Wsccherry	3	

	English	Français	Deutsch	Español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
6.	VG	<u>Varieties with laterals with flower buds or flowers only:</u>				
(+)		Inflorescence: form				
PQ	(a)	horizontal			Limoni	1
		domed			Martina	2
		deeply domed			Optima	3
7.	VG/ (* (+)	Stem (excluding laterals): length of internode				
MG						
QN	(b)	short			Devon Wizard	3
		medium			Aveiro, Komari	5
		long			Sinai	7
8.	MG	Stem (excluding laterals): thickness of internode				
(+)						
QN	(b)	very thin			Hearts Desire, Hijoli	1
		thin			Devon Glow	3
		medium			Komari, White Prestige	5
		thick			Goblin, Tico Tico	7
		very thick			Wscrcrystal	9
9.	VG	Stem (excluding laterals): cross section				
QL	(b)	circular			Hilbreking	1
		edged			Komari, Leila, Martina	2
		flabellate				3
10.	VG	Stem (excluding laterals): hollowness				
QL	(b)	absent			Komari, Leila, Martina	1
		present			Hilbreking	9
11.	VG	Leaf: shape				
(* (+)						
PQ	(c)	ovate			Tico Tico	1
		linear				2
		elliptic			Komari, Martina	3
		obovate			Shooting Star	4

	English	Français	Deutsch	Español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
12. VG/ MG (*)	Leaf: length					
QN (c)	short				Shooting Star	3
	medium				Leila, Martina	5
	long				Don Pedro, Komari	7
13. VG/ MG (*)	Leaf: width					
QN (c)	narrow				Aveiro	3
	medium				Grand Slam, Komari	5
	broad				Hilbreking	7
14. VG (*) (+)	Leaf: longitudinal axis					
QN (c)	absent or very weakly recurved				Devon Wizard, Komari	1
	weakly recurved				Shooting Star	2
	moderately recurved				Martina	3
	strongly recurved				Prado Pino	4
	very strongly recurved				Raspberry Ripple	5
15. VG (*) (+)	Leaf: cross section (upper side)					
QN (c)	absent or very weakly concave				Beam Cherry, Kledp09102	1
	weakly concave				Leila, Martina, Tico Tico	2
	moderately concave				Kiro, Komari	3
	strongly concave				Barabril, Red Romany	4
16. VG	Leaf: color					
PQ (c)	yellow green					1
	medium green				Leila	2
	dark green					3
17. VG	Leaf: waxy layer					
QN (c)	weak				Farida, Leila	1
	medium				Grand Slam, Tico Tico	3
	strong				Komari, White Prestige	5

	English	Français	Deutsch	Español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
18.	VG					
(+)						
	Leaf: spiny ciliation of margin					
QL	(c)	absent			Komari, Martina	1
		present			Whatfield Can Can	9
19.	VG					
(*)						
(+)						
	Bud: shape					
PQ	(d)	round			Baryetar	1
		oblong			Kiro	2
		ovate			Kledc05045	3
		elliptic			Fontaine Dark Red, Hiltespret	4
		obovate			Komari, Leila, Martina	5
20.	VG					
(+)						
	Bud: extrusion of styles					
QL	(d)	absent			Komari, Leila, Martina	1
		present			Hilvulca, Kleds07504	9
21.	VG/ MG					
(*)						
(+)						
	Flower: diameter					
QN		very small				1
		small			Shooting Star	3
		medium			Devon Wizard	5
		large			Farida, Komari, Leila	7
		very large				9
22.	VG					
(+)						
	Epicalyx: position of outer lobes in relation to calyx					
QN		adpressed			Komari, Martina, Tico Tico	1
		intermediate				2
		free			Leila, Nirvana	3
23.	VG					
(*)						
(+)						
	Epicalyx: apex of outer lobes					
QN		acute			Komari, Martina, Tico Tico	1
		acute to acuminate				2
		acuminate			Kiro	3

	English	Français	Deutsch	Español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
24.	VG					
(+)						
	QN					
					Komari, Martina, Tico Tico	1
					Devon Glow, Leila	2
					Sunrrb126, Wscrcystal	3
25.	VG					
(*)						
(+)						
	QN					
					Komari, Martina, Tico Tico	1
						2
					Kiro	3
26.	VG					
(+)						
	QN					
					Komari, Martina	1
					Sunrrb126	2
					Wscrcystal	4
27.	VG					
	QN					
					Whatfield Can Can	3
					Komari, Leila, Martina	5
					Kleds10624, Princess	7
28.	VG					
(*)						
(+)						
	PQ					
					Kiro, Tico Tico	1
					Martina	2
					Gaudina, Komari, Leila	3
29.	VG					
(+)						
	PQ					
					Whatfield Can Can	1
					Martina, Tico Tico	2
					Optima	3
					Gaudina, Komari, Leila	4

	English	Français	Deutsch	Español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
30.	VG	Calyx: position of anthocyanin coloration				
PQ	none				Komari, Leila, Martina	1
	edge of lobe				Aveiro	2
	whole lobe				Houndspool Cheryl	3
	whole calyx				Calypso Star	4
31.	VG	Calyx: anthocyanin coloration				
PQ	weak				Aveiro	1
	medium				Shooting Star	2
	strong				Simba, Sunre130	3
32.	VG	Calyx: shape of lobe				
(+)						
PQ	long acute				Aveiro	1
	short acute				Kiro, Komari, Leila	2
	short acuminate				Barfenix	3
33.	VG	Calyx: length of lobe				
QN	short				Kiro, Komari, Tico Tico	3
	medium				Aveiro, Leila	5
	long				Hilbreking	7
34.	VG	Flower: type				
(*)						
(+)						
QL	single				Calypso Star	1
	double				Sam's Pride, William Sim	2
35.	MG	<u>Varieties with double flowers only</u>: Flower: number of petals				
(*)						
QN	few				Claudia	3
	medium				Komari, Martina	5
	many				Grand Slam, Tico Tico	7

	English	Français	Deutsch	Español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
36.	MG					
(*)						
(+)						
QN	low				Whatfield Can Can	3
	medium				Farida	5
	tall					7
37.	VG					
(*)						
(+)						
PQ	concave				Night Star	1
VG	flat				Shooting Star	2
	flat convex				Kiro, Komari	3
	convex				Leila, Martina, Tico Tico	4
38.	VG					
(*)						
(+)						
PQ	concave				Komari, Martina, Tico Tico	1
	flat				Whatfield Can Can	2
	flat convex				Leila, Night Star	3
	convex				Coral Reef, Waterloo Sunset	4
39.	VG					
(+)						
QL	(e) type 1				Martina, Tico Tico	1
	type 2				Baltico	2
	type 3				Grand Slam, Komari	3
	type 4				Nobroc, Sunrrb126	4
	type 5				Barlgraa, Wp08 ian04	5
	type 6				Gaudina	6
	type 7				Hilstertes, Minitiar Pink	7
40.	VG					
(+)						
PQ	(e) absent or weak				Hilbrequeen, Hilstertes	1
	medium					2
	strong					3

	English	Français	Deutsch	Español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
41.	VG	Petal: undulation				
	(+)					
PQ	(e)	absent or weak			Hilbrequeen, Hilstertes	1
		medium			Calypso Star, Komari	2
		strong				3
42.	VG	Petal: incisions of margin				
QL	(e)	absent or weak			Barmalyn, Koyevi	1
		medium			Barlitar	2
		strong			Komari, Martina, Red Romany	3
43.	VG	<u>Variety with incisions present only</u>; Petal: type of incisions of margin				
	(*)					
	(+)					
PQ	(e)	sinuate			Farida	1
		crenate			Grand Slam	2
		dentate			Leila	3
		serrate			White Prestige	4
		crenate-dentate			Komari, Martina	5
44.	VG	<u>Variety with incisions present only</u>; Petal: depth of incisions of margin				
QN	(e)	very shallow			Fleurette, Leila	1
		shallow			Intermezzo	3
		medium			Claudia	5
		deep			Pop Star	7
		very deep			CFPC Unforgettable	9
45.	VG/ MG	Petal: length				
QN	(e)	short			Whatfield Can Can	3
		medium			Candela	5
		long			Gaudina, Komari	7

	English	Français	Deutsch	Español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
46.	VG/ MG	Petal: width				
QN	(e)	narrow			Whatfield Can Can	3
		medium			Kiro, Leila, Tico Tico	5
		broad			Bartorbel, Kleds10625	7
47.	VG	Petal: color pattern				
(*)						
(+)						
PQ	(e)	none			Nelson	1
		narrow marginate			Komari	2
		marginate			Hilqueen, Leila	3
		striated			Bambuco, Komonte, Navidad	4
		speckled				5
		narrow marginate- striated			Idea, Shadow	6
		narrow marginate- speckled			Radiant, Spectro	7
		marginate-striated			Tempest, Vidako, Villesse	8
		marginate-speckled			Kovian, Swing	9
		narrow marginate- striated-speckled			Isola, Strike, Tico-Tico	10
		marginate-striated- speckled			Charlie	11
		striated-speckled			Kolilac	12
		shading off			Hilgucci, Red Curtain, Rosalba	13
		flushed			Antigua, Creola, Hilnotre, Terracotta	14
		maculate			Devon Wizard	15
		maculate-narrow marginate			Sunrwb135	16
		maculate-margined			Koes	17
48.	VG	Petal: main color				
(*)						
(+)						
PQ	(e)	RHS Colour Chart				
	(f)	(indicate reference number)				

	English	Français	Deutsch	Español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
49.	VG	<u>Varieties with more than one color only:</u>					
(+)		Petal: secondary color					
PQ	(e)	RHS Colour Chart					
	(f)	(indicate reference number)					
50.	VG	<u>Varieties with more than two colors only:</u>					
		Petal: tertiary color					
PQ	(e)	RHS Colour Chart					
	(f)	(indicate reference number)					
51.	VG	Ovary: shape					
(*)							
PQ		elliptic			Hilbreking	1	
		ovate			White Prestige	2	
		obovate			Farida, Komari, Leila	3	
		rhombic			Martina	4	
		cylindrical			Shooting Star	5	
52.	VG	Ovary: color of base					
PQ		whitish			Komari, White Prestige	1	
		yellowish			Kledg10119, Koviol	2	
		green			Leila, Shooting Star	3	
53.	VG	Ovary: surface					
QN		smooth			Claudia, Leila	1	
		slightly ribbed				2	
		strongly ribbed			Komari, Martina	3	
54.	VG	Style: number					
QN		only two			Claudia, Leila, Tico Tico	1	
		two and three			Aveiro, Komari	2	
		only three			Barjine, Red Romany	3	
		three and four			Kleos	4	
		only four			Barqedu, Kleds10624	5	
		two, three, four and five			Gaudina	6	
		more than five				7	

	English	Français	Deutsch	Español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
55. MG	Style: length					
QN	short				Shooting Star	1
	medium				Aveiro, Komari, Tico Tico	2
	long				Liberty	3
56. VG	Style: shoulder					
(+)						
QL	absent				Martina	1
	present				Aveiro, Komari, Tico Tico	9
57. VG	Stigma: color					
(*)						
PQ	white or cream				Komari, Martina, Tico Tico	1
	yellow				Leila	2
	pink				Barhugo	3
	white with red flush				Aveiro	4
	white with purple flush				Shooting Star	5
	red				Grand Slam	6
	purple				Burnob, Sunrrb126	7

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

Unless otherwise indicated below, all characteristics should be recorded at the time of full flowering.

Characteristics containing the following key in the second column of the Table of Characteristics should be examined as indicated below:

- (a) Only to be observed in varieties bred to be grown as spray carnations, without disbudding.
- (b) The main stem can be found by following the most direct line from top-flower to base. In varieties bred to be grown as spray and as one flower per stem carnation the length and thickness of the fifth internode directly below flower should be observed. In varieties bred to be grown as pot and outdoor carnation the length and thickness of the third internode directly below flower should be observed.
- (c) In varieties bred to be grown as spray and as one flower per stem carnation to be observed on leafs of the fifth node directly below flower. In varieties bred to be grown as pot and outdoor carnation to be observed on leafs of the third node directly below flower.
- (d) To be observed immediately before color shows.
- (e) To be observed on petals of the outer third row.
- (f) The main color is the color with the largest total surface area, the secondary color (if present) is the color with the second largest total surface area. In case of when none of the colors is clearly predominant then the lightest color will be the main color.

8.2 *Explanations for individual characteristics*

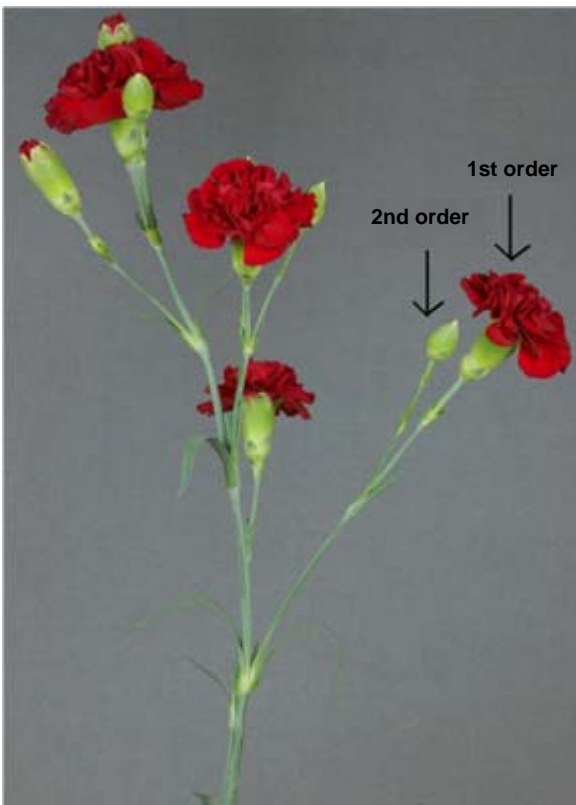
Ad. 1: Plant: length of stem

Length of stem should be measured from soil level to the end of the plant, excluding the flowers

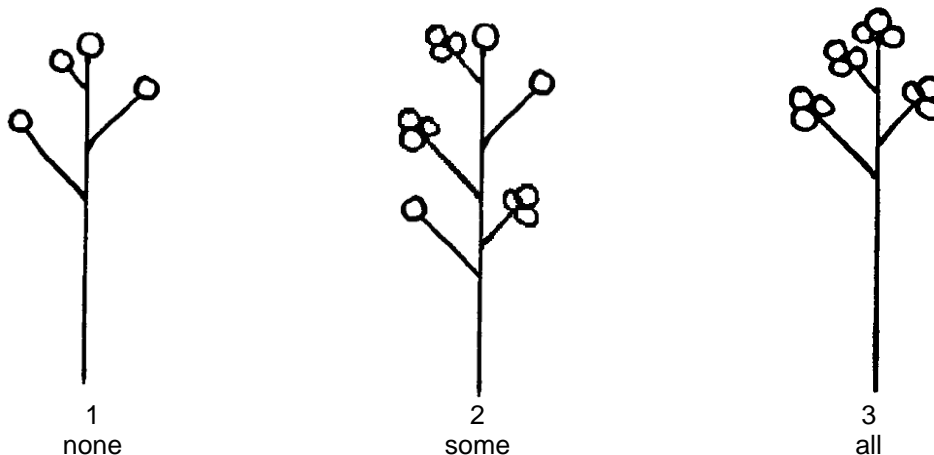
Ad. 2: Plant: laterals without flower buds or flowers



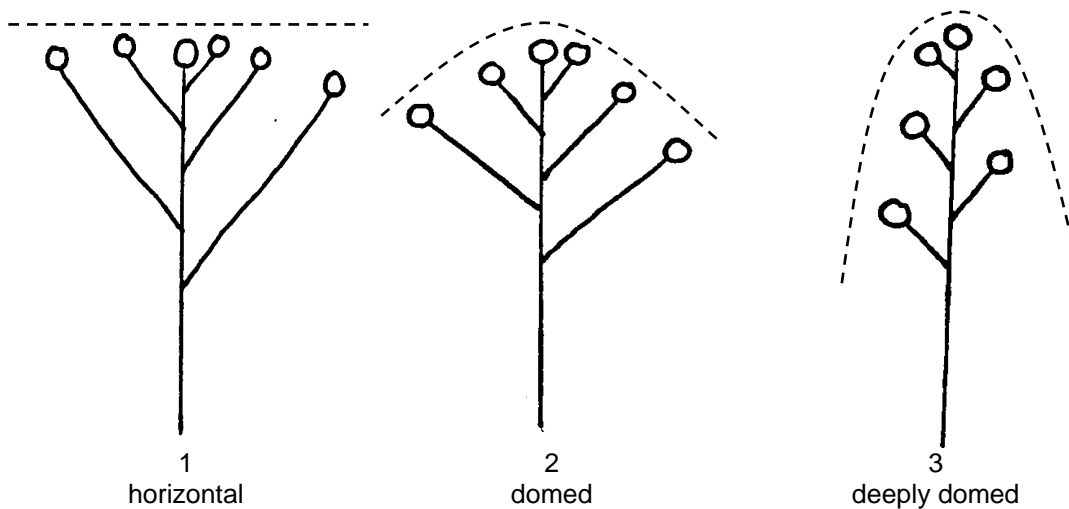
Ad. 4: Plant: laterals with flower buds or flowers of second order



Ad. 5: Plant: clustering on lateral branches.



Ad. 6: Varieties with laterals with flower buds or flowers only: Inflorescence: form

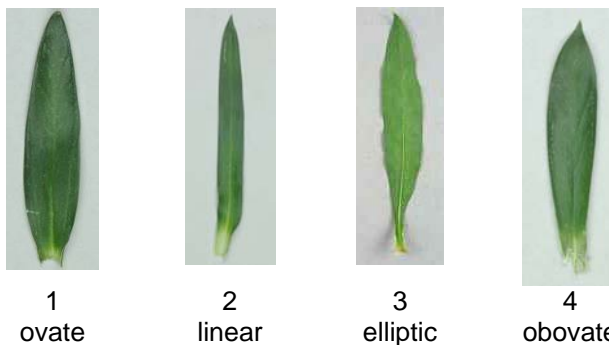


Ad. 7: Stem (excluding laterals): length of internode

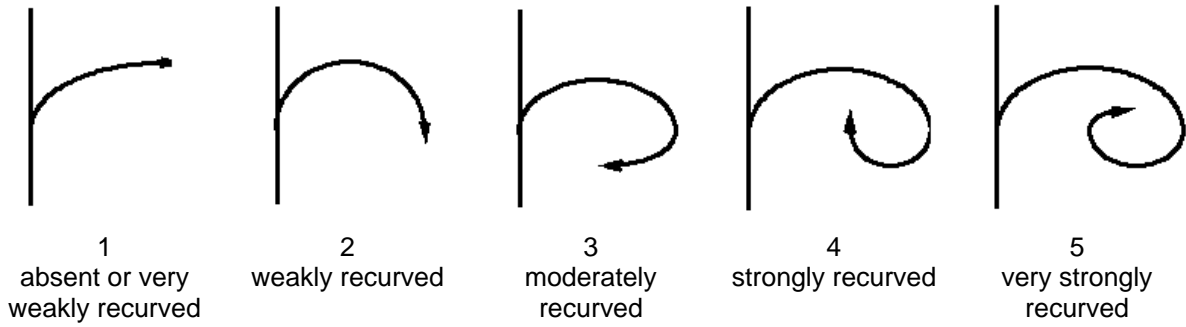
Ad. 8: Stem (excluding laterals): thickness of internode

The length and thickness of the 5th internode directly below the flower should be determined. For pot and outdoor carnations the length and thickness of the 3rd internode directly below the flower should be determined.

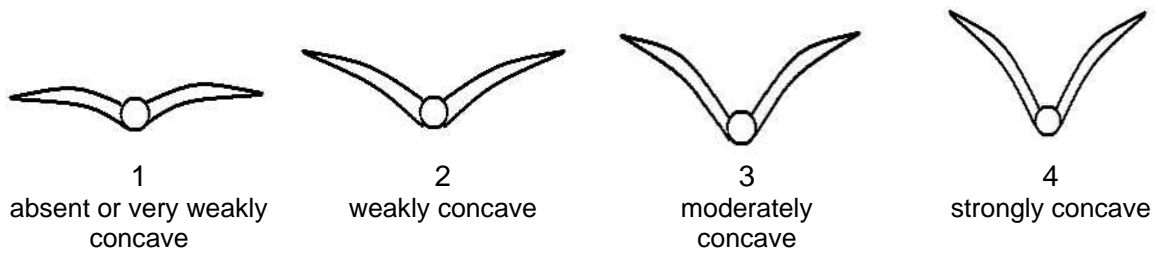
Ad. 11: Leaf: shape



Ad. 14: Leaf: longitudinal axis



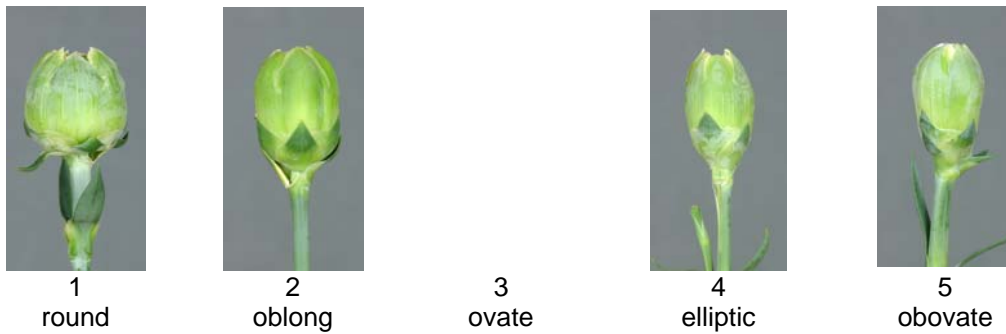
Ad. 15: Leaf: cross section (upper side)



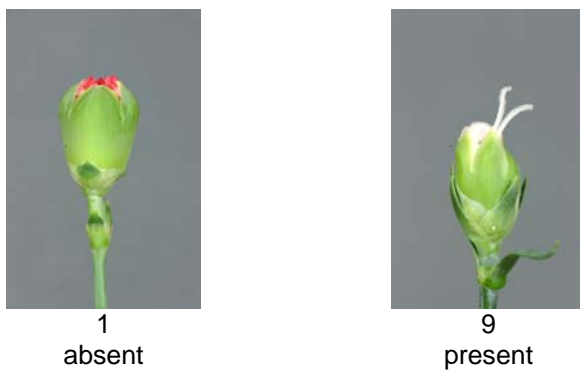
Ad. 18: Leaf: spiny ciliation of margin

To be observed by gently rubbing to and fro with your finger along the margin of the leaf.

Ad. 19: Bud: shape



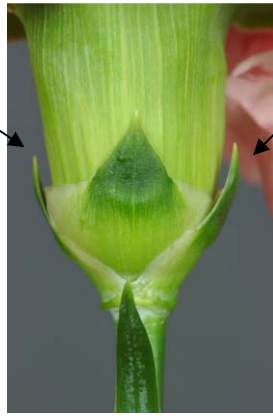
Ad. 20: Bud: extrusion of styles



Ad. 22: Epicalyx: position of outer lobes in relation to calyx



1
adpressed



3
free

Ad. 23: Epicalyx: apex of outer lobes

Ad. 25: Epicalyx: apex of inner lobes



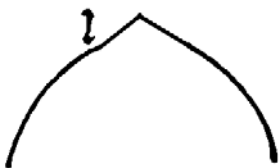
1
acute



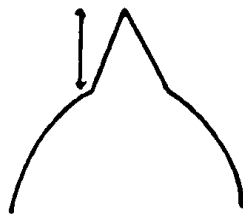
3
acuminate

Ad. 24: Epicalyx: length of apex of outer lobes

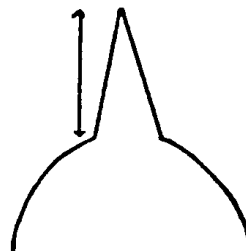
Ad. 26: Epicalyx: length of apex of inner lobes



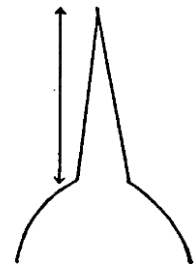
1
absent or very short



2
short

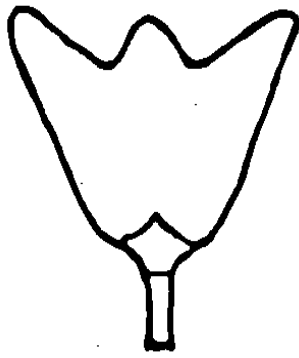


3
medium

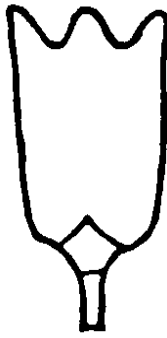


4
long

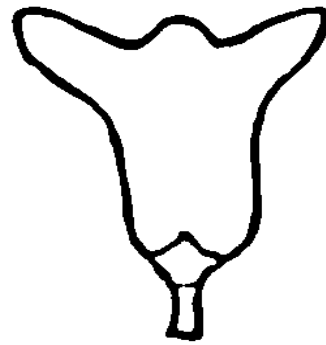
Ad. 28: Calyx: shape



1
funnel-shaped

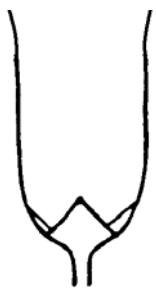


2
cylindrical

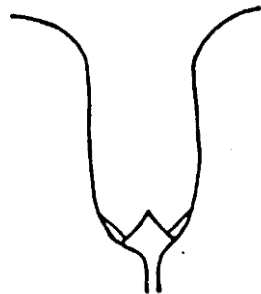


3
campanulate

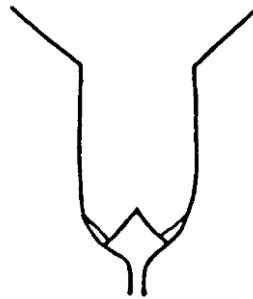
Ad. 29: Calyx: longitudinal axis of lobes (tip excluded)



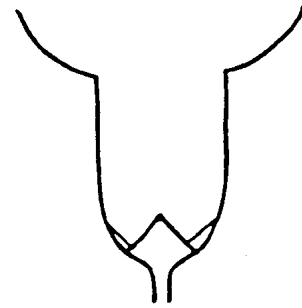
1
straight



2
concave

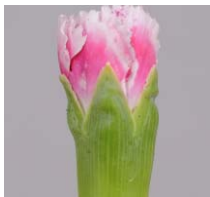


3
angled



4
convex

Ad. 32: Calyx: shape of lobe



1
long acute



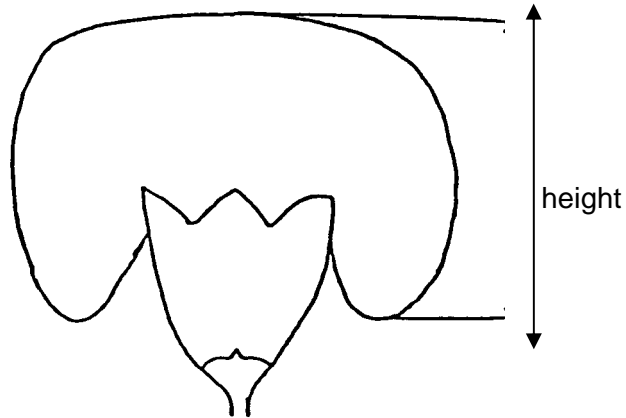
2
short acute

3
short acuminate

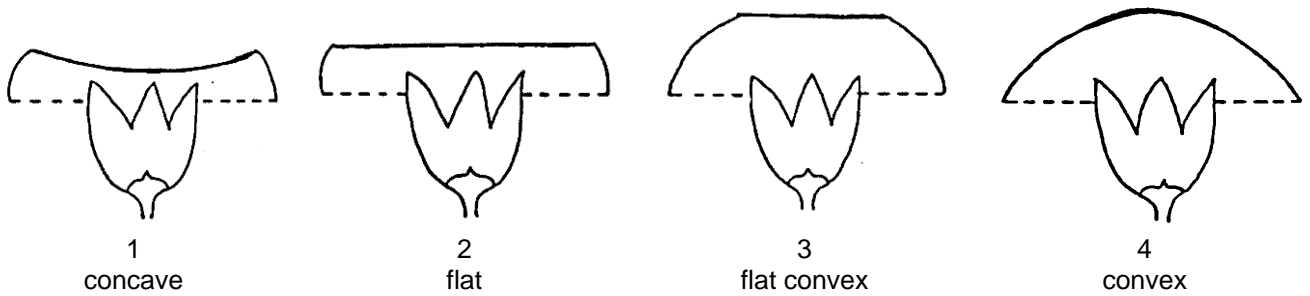
Ad. 34: Flower type

If a flower has more than 5 petals, it can be classified as a double flower type.

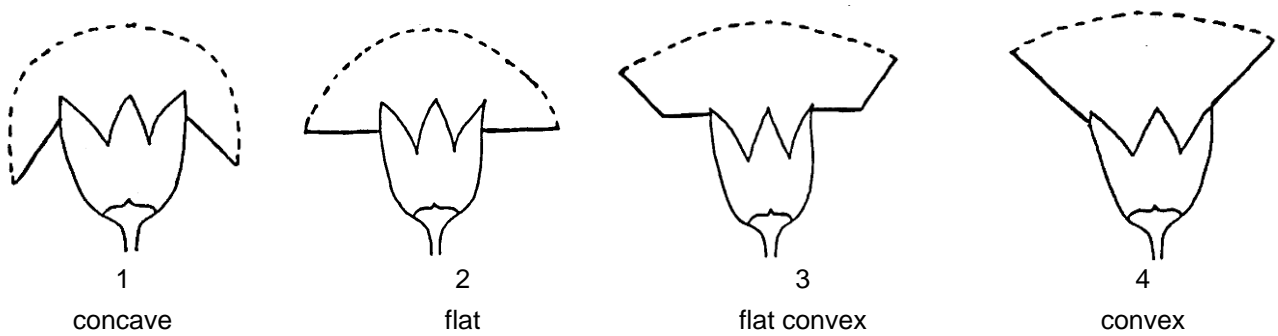
Ad. 36: Corolla: height



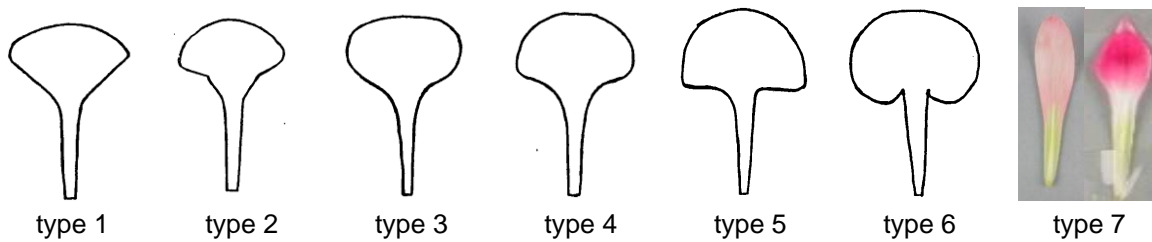
Ad. 37: Corolla: profile of upper part



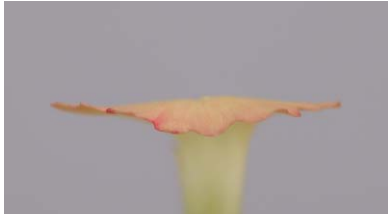
Ad. 38: Corolla: profile of lower part



Ad. 39: Petal: predominant shape



Ad. 40: Petal: folding

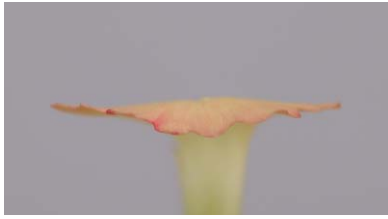


1
absent or weak



3
strong

Ad. 41: Petal: undulation








1
absent or weak

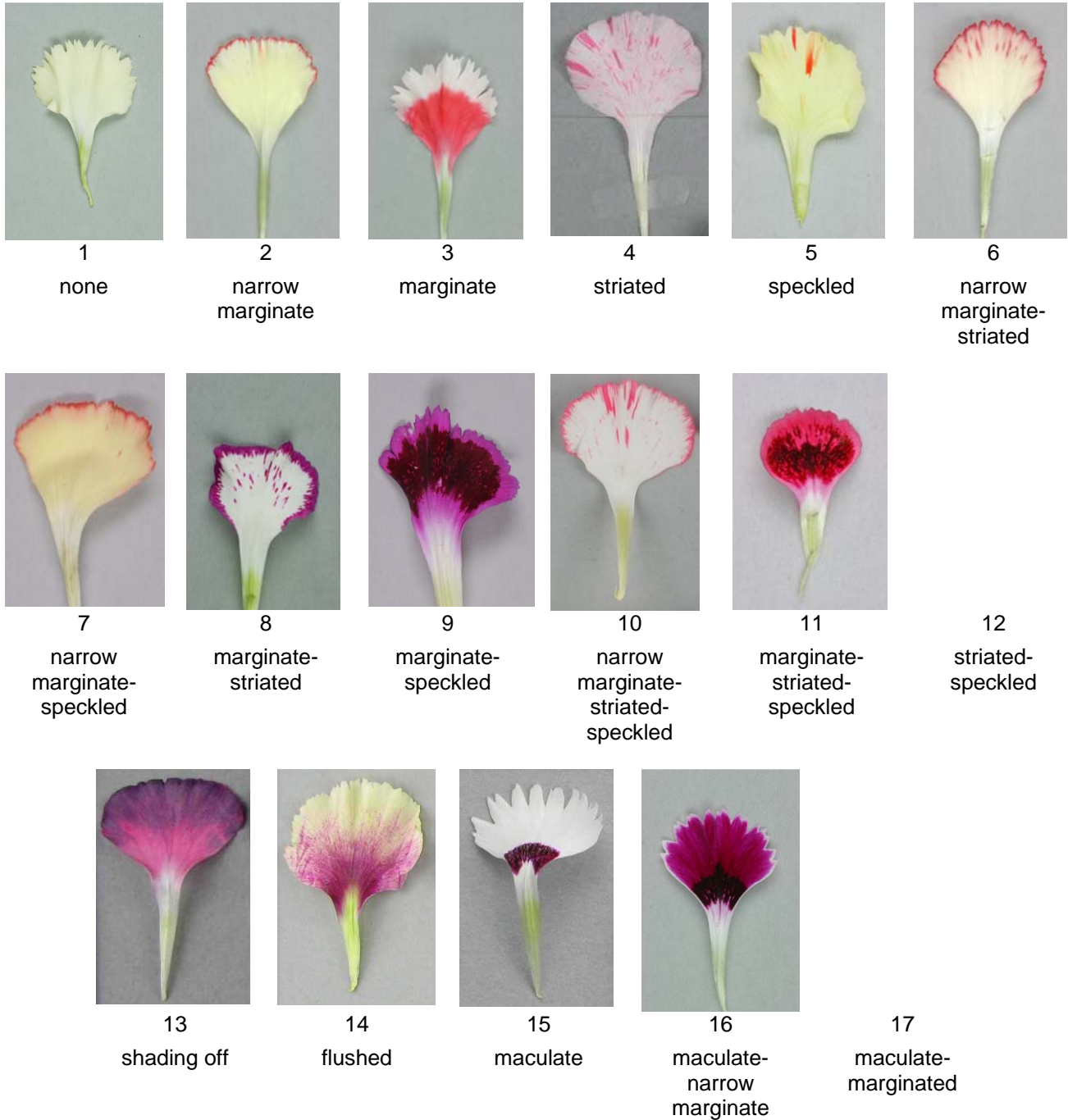


3
strong

Ad. 43: Variety with incisions present only: Petal: type of incisions of margin

1	sinuate	
2	crenate	
3	dentate	
4	serrate	
5	crenate-dentate	

Ad. 47: Petal: color pattern



Ad. 48: Petal: main color

Ad. 49: Varieties with more than one color only: Petal: secondary color

The main color is the color with the largest total surface area, the secondary color (if present) is the color with the second largest total surface area. In case of when none of the colors is clearly predominant then the lightest color will be the main color.

Ad. 51: Ovary: shape



1
elliptic



2
ovate



3
obovate

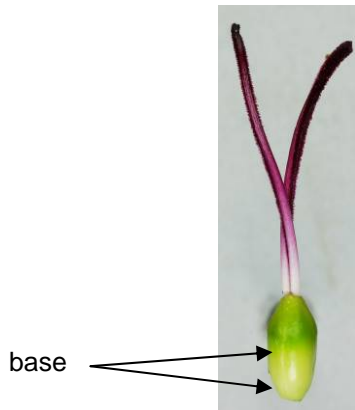


4
rhombic



5
cylindrical

Ad. 52: Ovary: color of base



Ad. 56: Style: shoulder



1
absent



9
present

9. Literature

Galbally, J. & Galbally, E., 1997: Carnations and Pinks. Timber Press Inc., Portland, Oregon, ISBN 0-88192-382-6

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights		
1. Subject of the Technical Questionnaire		
1.1 Botanical name	<input type="text" value="Dianthus L."/>	
1.2 Common name	<input type="text" value="Dianthus"/>	
2. Applicant		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	
Fax No.	<input type="text"/>	
E-mail address	<input type="text"/>	
Breeder (if different from applicant)	<input type="text"/>	
3. Proposed denomination and breeder's reference		
Proposed denomination (if available)	<input type="text"/>	
Breeder's reference	<input type="text"/>	

#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross []
(please state parent varieties)

(.....) x (.....)
female parent male parent

(b) partially known cross []
(please state known parent variety(ies))

(.....) x (.....)
female parent male parent

(c) unknown cross []

4.1.2 Mutation []
(please state parent variety)

.....

4.1.3 Discovery and development []
(please state where and when discovered and how developed)

.....

4.1.4 Other []
(please provide details)

.....

Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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4.2 Method of propagating the variety

4.2.1 Vegetative propagation

- (a) cuttings
- (b) *in vitro* propagation
- (c) other (state method)

4.2.2 Other
(please provide details)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

Characteristics	Example Varieties	Note
5.1 Flower: type (34)		
single	Calypso Star	1 []
double	Sam's Pride, William Sim	2 []
5.2 Petal: color pattern (47)		
none	Nelson	1 []
narrow marginate	Komari	2 []
marginate	Hilqueen, Leila	3 []
striated	Bambuco, Komonte, Navidad	4 []
speckled		5 []
narrow marginate-striated	Idea, Shadow	6 []
narrow marginate-speckled	Radiant, Spectro	7 []
marginate-striated	Tempest, Vidako, Villesse	8 []
marginate-speckled	Kovian, Swing	9 []
narrow marginate-striated-speckled	Isola, Strike, Tico-Tico	10 []
marginate-striated-speckled	Charlie	11 []
striated-speckled	Kolilac	12 []
shading off	Hilgucci, Red Curtain, Rosalba	13 []
flushed	Antigua, Creola, Hilnotre, Terracotta	14 []
maculate	Devon Wizard	15 []
maculate-narrow marginate	Sunrwb135	16 []
maculate-margined	Koes	17 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
5.3 Petal: main color (48)		
white or near white		1 []
green		2 []
yellow		3 []
orange		4 []
pink		5 []
pink purple		6 []
red		7 []
dark red		8 []
violet		9 []
violet red		10 []
purple		11 []
brownish		12 []
5.4 Varieties with more than one color only: Petal: secondary color (49)		
white or near white		1 []
green		2 []
yellow		3 []
orange		4 []
pink		5 []
pink purple		6 []
red		7 []
dark red		8 []
violet		9 []
violet red		10 []
purple		11 []
brownish		12 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for the characteristic(s) for your candidate variety
<i>Example</i>	<i>Flower: Color</i>	<i>orange</i>	<i>orange red</i>

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [] No []

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes [] No []

(If yes, please provide details)

7.3 Other information

7.3.1 Main use

- (a) garden plant []
- (b) pot plant []
- (c) cut-flower []
 - spray []
 - umbrella (Sweet William) []
 - one flower per stem []
- (d) other []
(please provide details)

In varieties bred to be grown as spray carnation, the lateral flower heads or lateral shoots are not removed. In varieties bred to be grown as one flower per stem carnation, the lateral flower heads or lateral shoots (if existing) are removed at an early stage to leave just the terminal flower head.

Varieties bred to be grown as pot carnation do not need a cold treatment (period) to induce optimal flowering. Varieties bred to be grown as outdoor carnation, do need a cold treatment (period) to induce optimal flowering.

7.3.2 A representative color image of the variety should accompany 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 (b) is yes, please attach a copy of the authorization.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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9. Information on plant material to be examined or submitted for examination.

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

Please provide details for where you have indicated "yes".

.....

9.3 Has the plant material to be examined been tested for the presence of virus or other pathogens?

Yes []
(please provide details as specified by the Authority)

No []

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant's name

Signature

Date

[End of document]