



PROTOCOL FOR TESTS ON DISTINCTNESS, UNIFORMITY AND STABILITY

Geranium L.

HARDY GERANIUM

UPOV Code: GERAN

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1. SUBJECT OF THE PROTOCOL AND REPORTING

1.1 Scope of the technical protocol

This Technical Protocol applies to all varieties of *Geranium L.*

The protocol describes the technical procedures to be followed in order to meet the requirements of Council Regulation 2100/94 on Community Plant Variety Rights. The technical procedures have been agreed by the Administrative Council and are based on documents agreed by the International Union for the Protection of New Varieties of Plants (UPOV), such as the General Introduction to DUS (UPOV Document TG/1/3 http://www.upov.int/export/sites/upov/resource/en/tg_1_3.pdf), its associated TGP documents (<http://www.upov.int/tgp/en/>) and the relevant UPOV Test Guideline TG/330/1 dated 30/10/2018 (<https://www.upov.int/edocs/tgdocs/en/tg330.pdf>) for the conduct of tests for Distinctness, Uniformity and Stability.

1.2 Entry into Force

The present protocol enters into force on **01.04.2020**. Any ongoing DUS examination of candidate varieties started before the aforesaid date will not be affected by the approval of the Technical Protocol. Technical examinations of candidate varieties are carried out according to the TP in force when the DUS test starts. The starting date of a DUS examination is considered to be the due date for submitting of plant material for the first test period.

In cases where the Office requests to take-over a DUS report for which the technical examination has either been finalized or which is in the process to be carried out at the moment of this request, such report can only be accepted if the technical examination has been carried out according to the CPVO TP which was in force at the moment when the technical examination started.

1.3 Reporting between Examination Office and CPVO and Liaison with Applicant

1.3.1 Reporting between Examination Office and CPVO

The Examination Office shall deliver to the CPVO a preliminary report ("the preliminary report") no later than two weeks after the date of the request for technical examination by the CPVO.

The Examination Office shall also deliver to the CPVO a report relating to each growing period ("the interim report") and, when the Examination Office considers the results of the technical examination to be adequate to evaluate the variety or the CPVO so requests, a report relating to the examination ("the final report").

The final report shall state the opinion of the Examination Office on the distinctness, uniformity and stability of the variety. Where it considers those criteria to be satisfied, or where the CPVO so requests, a description of the variety shall be added to the report.

The interim and the final reports shall be delivered to the CPVO as soon as possible and no later than on the deadlines as laid down in the designation agreement.

1.3.2 Informing on problems in the DUS test

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

1.3.3 Sample keeping in case of problems

If the technical examination has resulted in a negative report, the CPVO shall inform the Examination Office as soon as possible in case that a representative sample of any relevant testing material shall be kept.

2. MATERIAL REQUIRED

2.1 Plant material requirements

Information with respect to the agreed closing dates and submission requirements of plant material for the technical examination of varieties can be found on <http://cpvo.europa.eu/applications-and-examinations/technical-examinations/submission-of-plant-material-s2-publication> in the special issue S2 of the Official Gazette of the Office. General requirements on submission of samples are also to be found following the same link.

2.2 Informing the applicant of plant material requirements

The CPVO informs the applicant that

- he is responsible for ensuring compliance with any customs and plant health requirements.
- the plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.
- 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.

2.3 Informing about problems on the submission of material

The Examination Office shall report to the CPVO immediately in cases where the test material of the candidate variety has not arrived in time or in cases where the material submitted does not fulfil the conditions laid down in the request for material issued by the CPVO.

In cases where the examination office encounters difficulties to obtain plant material of reference varieties the CPVO should be informed.

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" http://www.upov.int/edocs/tgpdocs/en/tgp_9.pdf.

3.3 Conditions for Conducting the Examination

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.

Because daylight varies, colour determinations made against a colour 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 colour 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 10 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 Special tests for additional characteristics

In accordance with Article 23 of Implementing Rules N° 874/2009 an applicant may claim either in the Technical Questionnaire or during the test that a candidate has a characteristic which would be helpful in establishing distinctness. If such a claim is made and is supported by reliable technical data, a special test may be undertaken providing that a technically acceptable test procedure can be devised.

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

3.6 Constitution and maintenance of a variety collection

The process for the constitution and the maintenance of a variety collection can be summarized as follows:

Step 1: Making an inventory of the varieties of common knowledge

Step 2: Establishing a collection ("variety collection") of varieties of common knowledge which are relevant for the examination of distinctness of candidate varieties

Step 3: Selecting the varieties from the variety collection which need to be included in the growing trial or other tests for the examination of distinctness of a particular candidate variety.

3.6.1 Forms of variety collection

The variety collection shall comprise variety descriptions and may comprise living plant material. The variety description shall be produced by the EO unless special cooperation exists between EOs and the CPVO. The variety collection shall comprise images (e.g. photographs, illustrations or digitalized images) of representative parts of the plants of each variety, produced by the respective EO. The descriptive and pictorial information produced by the EO shall be held and maintained in a form of a database.

3.6.2 Living Plant Material

The EO shall obtain living plant material of reference varieties as and when those varieties need to be included in growing trials or other tests.

3.6.3 Making an inventory of varieties of common knowledge for inclusion in the variety collection

The inventory shall include varieties protected under National and Community PBR, varieties in trade or in commercial registers.

In addition to the above, the inventory shall be extended to the appropriate to

- any commercial document in which varieties are marketed as propagating or harvested material, especially when there is no official registration system;
- any list including varieties which are publicly available within plant collections (varieties included in genetic resource collections, collection of old varieties, etc.);
- information provided by relevant plant experts;
- relevant example varieties referred to in the technical protocols

4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY

The prescribed procedure is to assess distinctness, uniformity and stability in a growing trial.

4.1 Distinctness

4.1.1 General recommendations

It is of particular importance for users of this Technical Protocol to consult the UPOV-General Introduction to DUS (link in chapter 1 of this document) and TGP 9 'Examining Distinctness' (http://www.upov.int/edocs/tgpdocs/en/tgp_9.pdf) prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in this Technical Protocol.

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 Technical Protocols are familiar with the recommendations contained in the UPOV-General Introduction to DUS 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 9 plants or parts taken from each of 9 plants and any other observations made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 2.

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 third 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 this Technical Protocol to consult the UPOV-General Introduction to DUS (link in chapter 1 of this document) and TGP 10 'Examining Uniformity' (http://www.upov.int/edocs/tgpdocs/en/tgp_10.pdf) prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in this Technical Protocol:

4.2.2 This Technical Protocol has been developed for the examination of [type or types of propagation] varieties. For varieties with other types of propagation the recommendations in the UPOV-General Introduction to DUS and document TGP/13 "Guidance for new types and species", Section 4.5 "Testing Uniformity" should be followed.

For the assessment of uniformity of vegetatively propagated varieties, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 10 plants, 1 off-type is allowed.

4.3 **Stability**

4.3.1 It is of particular importance for users of this Technical Protocol to consult the UPOV-General Introduction to DUS (link in chapter 1 of this document) and TGP 11 'Examining Stability' (http://www.upov.int/edocs/tgpdocs/en/tgp_11.pdf)

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 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 ORGANISATION 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 organise the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics.

- a) Plant: habit (characteristic 1)
- b) Plant: height (characteristic 2)
- c) Leaf: main colour (characteristic 6)

- Gr 1: whitish
- Gr 2: green
- Gr 3: purplish or brownish green
- Gr 4: yellow green
- Gr 5: yellow
- Gr 6: purple
- Gr 7: brownish purple
- Gr 8: brownish
- Gr 9: reddish brown

- d) Flower: attitude (characteristic 23)
- e) Flower: type (characteristic 24)
- f) Petal: main colour (characteristic 32)

- Gr 1: white
- Gr 2: light pink
- Gr 3: medium pink
- Gr 4: dark pink
- Gr 5: orange red
- Gr 6: red purple
- Gr 7: purple
- Gr 8: violet
- Gr 9: blue
- Gr 10: reddish brown

5.4 If other characteristics than those from the Technical Protocol are used for the selection of varieties to be included into the growing trial, the EO shall inform the CPVO and seek the prior consent of the CPVO before using these characteristics.

5.5 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the UPOV-General Introduction to DUS and document TGP/9 "Examining Distinctness".

6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS

6.1 Characteristics to be used

The characteristics to be used in DUS tests and preparation of descriptions shall be those referred to in the table of characteristics. All the characteristics shall be used, providing that observation of a characteristic is not rendered impossible by the expression of any other characteristic, or the expression of a characteristic is prevented by the environmental conditions under which the test is conducted or by specific legislation on plant health. In the latter case, the CPVO should be informed.

The Administrative Council empowers the President, in accordance with Article 23 of Commission Regulation N°874/2009, to insert additional characteristics and their expressions in respect of a variety.

6.2. States of expression and corresponding notes

In the case of qualitative and pseudo-qualitative characteristics, 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

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

6.3 Example Varieties

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

6.4 Legend

For column 'CPVO N°':

G	Grouping characteristic	-see Chapter 5
QL	Qualitative characteristic	
QN	Quantitative characteristic	
PQ	Pseudo-qualitative characteristic	
(+)	Explanations for individual characteristics	-see Chapter 8.2

For column 'UPOV N°':

The numbering of the characteristics is provided as a reference to the UPOV guideline.

(*)	UPOV Asterisk characteristic	-Characteristics that are important for the international harmonization of variety descriptions.
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For column 'Stage, method':

MG, MS, VG, VS		-see Chapter 4.1.5
(a)-(f)	Explanations covering several Characteristics	-see Chapter 8.1

7. TABLE OF CHARACTERISTICS

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note	
1. (+)	1. (*)	VG	Plant: habit			
			PQ	upright		1
				semi-upright	Midnightlyona	2
				spreading	Gerwat	3
G			horizontal	Noorthava	4	
2.	3. (*)	MG/MS /VG	Plant: height			
			QN	very short	Thunder Cloud	1
				short	Noorthava	3
				medium	Catherine Deneuve	5
				tall	Samobor	7
G			very tall		9	
3. (+)	5. (*)	MG/MS /VG	Leaf: length			
			QN	very short	Melody	1
				short	Blushing Turtle	3
				medium	Noorthava	5
				long		7
		very long	Catherine Deneuve	9		
4. (+)	6. (*)	MG/MS /VG	Leaf: width			
			QN	very narrow	Melody	1
				narrow	Blushing Turtle	3
				medium	Noorthava	5
				broad		7
		very broad	Catherine Deneuve	9		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note		
5. (+)	7. (*)	MG/MS /VG	Leaf: length/width ratio				
			QN	very low		1	
				low		2	
				medium		3	
				high		4	
			very high		5		
6.	8. (*)	VG	Leaf: main colour				
G	PQ	(a), (b), (c)	RHS Colour Chart (indicate reference number)				
7.	9. (*)	VG	Leaf: secondary colour				
			PQ	(a), (b)	none		1
					whitish	Jester's Jacket	2
					light green	Noorthava	3
					medium green	Springtime	4
					dark green		5
					yellow green	Margaret Wilson	6
					grey green		7
					yellow	Spring Fling	8
					pink		9
					red		10
					purple		11
					brownish purple		12
					brownish	Samobor	13
		reddish brown	Katherine Adele	14			

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note	
8. (+)	10. (*)	VG PQ (a), (b)	Leaf: distribution of secondary colour			
			on margin		1	
			marginal zone	Springtime	2	
			central zone	Katherine Adele	3	
			intermediate zone	Samobor	4	
			at sinus		5	
		throughout	Jester's Jacket	6		
9. (+)	11. (*)	VG PQ (a), (b)	Leaf: pattern of secondary colour			
			solid or nearly solid		1	
			flushed		2	
			blotched		3	
			veined		4	
		irregular sectors		5		
10.	12.	VG PQ (a), (b)	Leaf: tertiary colour			
			none		1	
			whitish		2	
			light green		3	
			medium green		4	
			dark green		5	
			yellow green		6	
			grey green		7	
			yellow		8	
			pink	Jester's Jacket	9	
			red	Spring Fling	10	
			purple		11	
			brownish purple		12	
			brownish		13	
reddish brown		14				

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note		
11. (+)	13.	VG	Leaf: distribution of tertiary colour				
			PQ	(a), (b)	on margin		1
					marginal zone		2
					central zone		3
					intermediate zone		4
					at sinus		5
					throughout		6
12. (+)	14.	VG	Leaf: pattern of tertiary colour				
			PQ	(a), (b)	solid or nearly solid		1
					flushed		2
					blotched		3
					veined		4
					irregular sectors		5
13.	16.	VG	Leaf: glossiness				
			QN	(a)	absent or very weak	Noorthava	1
					weak	Blushing Turtle	2
					medium	Purple Passion	3
					strong	Thunder Cloud	4
					very strong	Clos du Coudray	5
14.	17. (*)	VG	Leaf: rugosity				
			QN	(a)	absent or very weak	Melody	1
					weak		2
					medium	Bremdream	3
					strong	Catherine Deneuve	4
					very strong	Philippe Vapelle	5

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note	
15. (+)	18. (*)	VG	Leaf: depth of sinus			
			QN	(a), (c)	absent or very shallow	1
					shallow	3
					medium	5
					deep	7
					very deep	9
16. (+)	20.	VG	Leaf: margins of lobe			
			PQ	(a), (c)	diverging	1
					straight	2
					converging	3
					G	overlapping
17. (+)	21.	VG	Leaf: shape of lobe apex			
			PQ	(a), (c)	acute	1
					obtuse	2
					rounded	3
					truncate	4
18. (+)	22.	VG	Leaf: basal lobes			
			PQ	(a)	strongly diverging	1
					moderately diverging	2
					weakly diverging	3
					straight	4
					overlapping	5
19. (+)	23. (*)	VG	Leaf: number of incisions of margin			
			QN	(a)	few	3
					medium	5
					many	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note		
20. (+)	24. (*)	VG	Leaf: depth of incisions of margin				
			QN	(a)	shallow	3	
					medium	5	
					deep	7	
21. (+)	25. (*)	VG	Flower stem: branching habit				
			QL		laterals branching both sides	1	
					laterals branching one side only	2	
22.	27.	MG/MS /VG	Inflorescence: peduncle length				
			QN		short	Rise and Shine	3
					medium	Blushing Turtle	5
					long	Noorthava	7
23. (+)	29. (*)	VG	Flower: attitude				
			QN	(d)	upwards		1
					slightly outwards	Gerwat	2
					strongly outwards	Midnightlyona	3
					downwards		4
G							
24. (+)	30. (*)	VG	Flower: type				
			QL	(d)	single	Gerwat	1
					double	Gernic	2
G							
25.	31. (*)	MG/MS /VG	Flower: diameter				
			QN	(d)	small	Melody	3
					medium	Noorthava	5
					large	Ivan	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note	
26. (+)	32. (*)	VG	Only varieties with flower type: <u>single</u>: Flower: profile in cross section			
		QN	(d)	strongly concave		1
				moderately concave		2
				weakly concave		3
				flat		4
				weakly convex		5
				moderately convex		6
G		strongly convex		7		
27. (+)	33. (*)	VG	Petal: arrangement			
		QN	(d), (e)	moderately separate		1
				weakly separate		2
				touching		3
				weakly overlapping		4
	moderately overlapping		5			
28.	35. (*)	MG/MS /VG	Petal: length			
		QN	(d), (e)	short	Purple Passion	3
				medium	Midnightlyona	5
		long	Philippe Vapelle	7		
29.	36. (*)	MG/MS /VG	Petal: width			
		QN	(d), (e)	narrow	Catherine Deneuve	3
				medium	Midnightlyona	5
		broad	Ivan	7		
30. (+)	37. (*)	MG/MS /VG	Petal: length/width ratio			
		QN	(d), (e)	low		3
				medium		5
		high		7		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note	
31. (+)	38. (*)	VG	Petal: shape of apex			
		PQ	(d), (e)	acute		1
				obtuse		2
				rounded		3
				truncate		4
				cordate		5
				lacinate		6
32.	39. (*)	VG	Petal: main colour			
		G	PQ	(d), (e), (f)	RHS Colour Chart (indicate reference number)	
33. (+)	40. (*)	VG	Petal: distribution of secondary colour			
		PQ	(d), (e), (f)	none		1
				marginal zone		2
				distal quarter		3
				distal half		4
				basal half		5
				basal quarter		6
				at base		7
				transverse band		8
throughout		9				
34.	41. (*)	VG	Petal: secondary colour			
		PQ	(d), (e), (f)	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note	
35. (+)	42.	VG	Petal: pattern of secondary colour			
			PQ	(d), (e), (f)	solid or nearly solid	1
					flushed	2
					speckled and striped	3
36. (+)	43.	VG	Petal: distribution of tertiary colour			
			PQ	(d), (e), (f)	none	1
					marginal zone	2
					distal quarter	3
					basal quarter	4
					at base	5
					transverse band	6
					throughout	7
37.	44.	VG	Petal: tertiary colour			
			PQ	(d), (e), (f)	RHS Colour Chart (indicate reference number)	
38. (+)	45.	VG	Petal: pattern of tertiary colour			
			PQ	(d), (e), (f)	solid or nearly solid	1
					flushed	2
					speckled and striped	3
39. (+)	46. (*)	VG	Petal: conspicuousness of veins			
			QN	(d), (e)	very weak	1
					weak	2
					medium	3
					strong	4
					very strong	5

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
40. (+)	47.	VG PQ (d), (e)	Petal: distribution of conspicuous veins		
			distal quarter		1
			distal half		2
			distal three quarters		3
			middle part		4
			basal three quarters		5
			basal half		6
			basal quarter		7
			throughout		8
41. (+)	48. (* PQ	VG (d), (e)	Petal: colour of veins		
			light pink		1
			medium pink		2
			dark pink		3
			red		4
			light red purple		5
			medium red purple		6
			dark red purple	Catherine Deneuve	7
			light purple		8
			medium purple	Blushing Turtle	9
			dark purple	Noorthava	10
			violet blue		11
			blue		12
blackish	Melody	13			

8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS

8.1 Explanations covering several characteristics

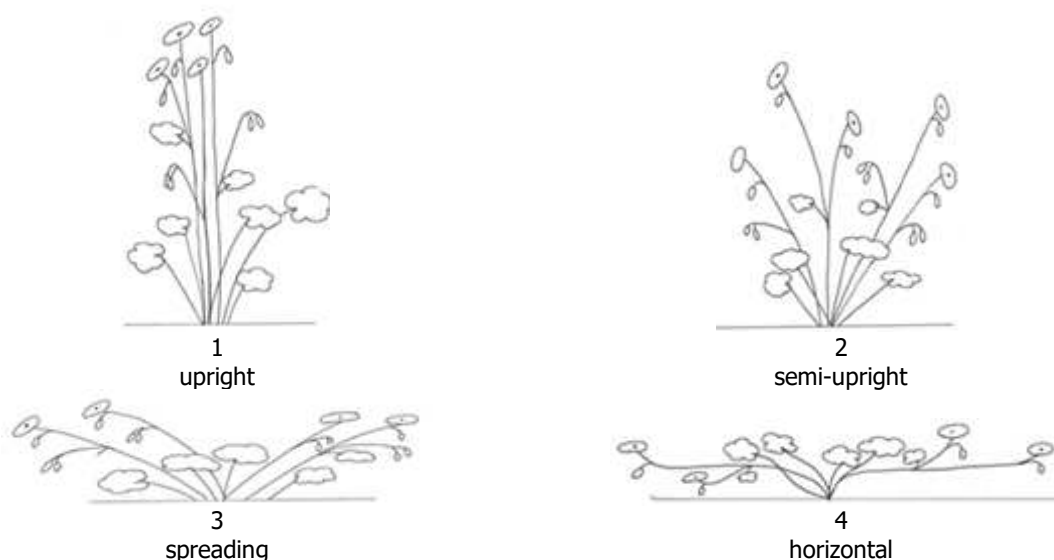
Observations should be made at the time of full flowering.

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

- a) Observations should be made on the upper side of fully expanded leaves from the middle third of a flowering stem, excluding the inflorescence.
- b) Any colour effect caused by the leaf pubescence should be ignored. The main colour is the colour with the largest surface area. The colour with the second largest area is the secondary colour. The colour with the third largest area is the tertiary colour. In cases where the areas of the colours are too similar to reliably decide which colour has the largest area, the darker colour is considered to be the main colour.
- c) Observations should be made on the terminal lobe. Where it is not possible to clearly differentiate the terminal lobe, this should be observed on the lobe that is most directly opposite the attachment point of the petiole.
- d) Observations should be made on new fully open flowers.
- e) In double flowered varieties, observations should be made on the outer whorl of petals.
- f) Observations should be made on the inner surface. The colour of the veins should be excluded. The main colour is the colour with the largest surface area. The colour with the second largest area is the secondary colour, and the colour with the third largest area is the tertiary colour. In cases where the areas are too similar to reliably decide which colour has the largest area, the darker colour is considered to be the main colour. The guideline makes provision for three colours; if more colours are present, those with the smallest area should not be observed.

8.2 Explanations for individual characteristics

Ad. 1: Plant: habit



Ad. 3: Leaf: length

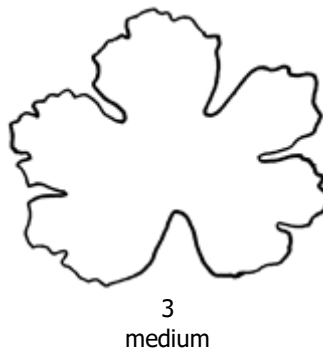
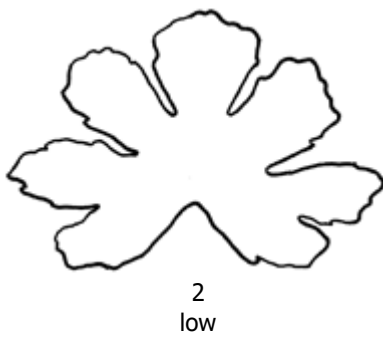
To observe the leaf length from the lowest to highest point of the leaf.



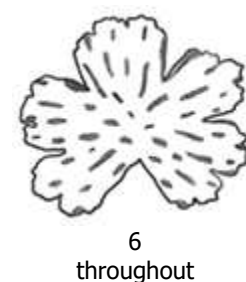
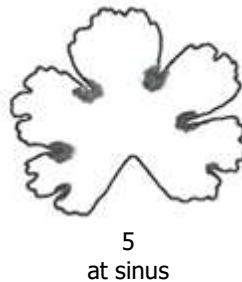
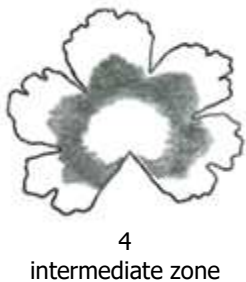
Ad. 4: Leaf: width

Observe at widest point.

Ad. 5: Leaf: length/width ratio



Ad. 8: Leaf: distribution of secondary colour



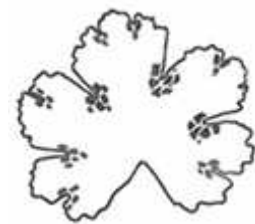
Ad. 9: Leaf: pattern of secondary colour



1
solid or nearly solid



2
flushed



3
blotched



4
veined



5
irregular sectors

Ad. 11: Leaf: distribution of tertiary colour

See Ad. 8.

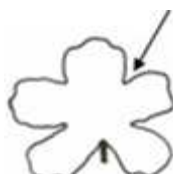
Ad. 12: Leaf: pattern of tertiary colour

See Ad. 9.

Ad. 15: Leaf: depth of sinus



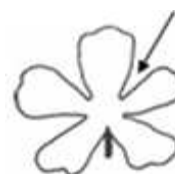
1
absent or very shallow



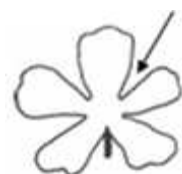
3
shallow



5
medium



7
deep



9
very deep

Ad. 16: Leaf: margins of lobe



1
diverging



2
straight

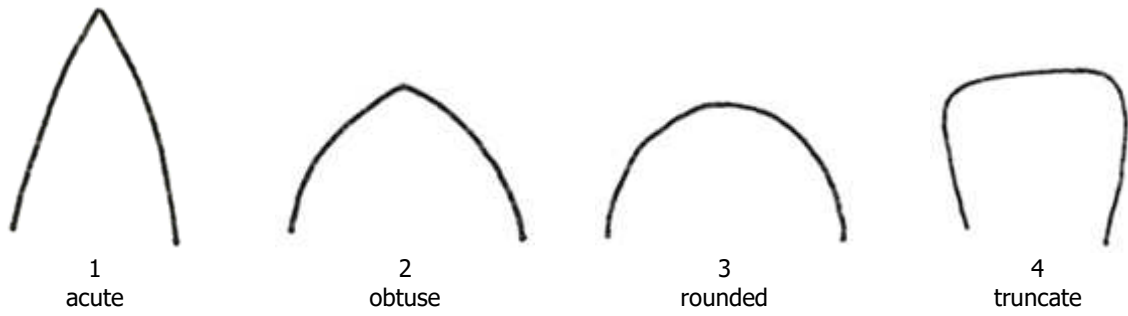


3
converging

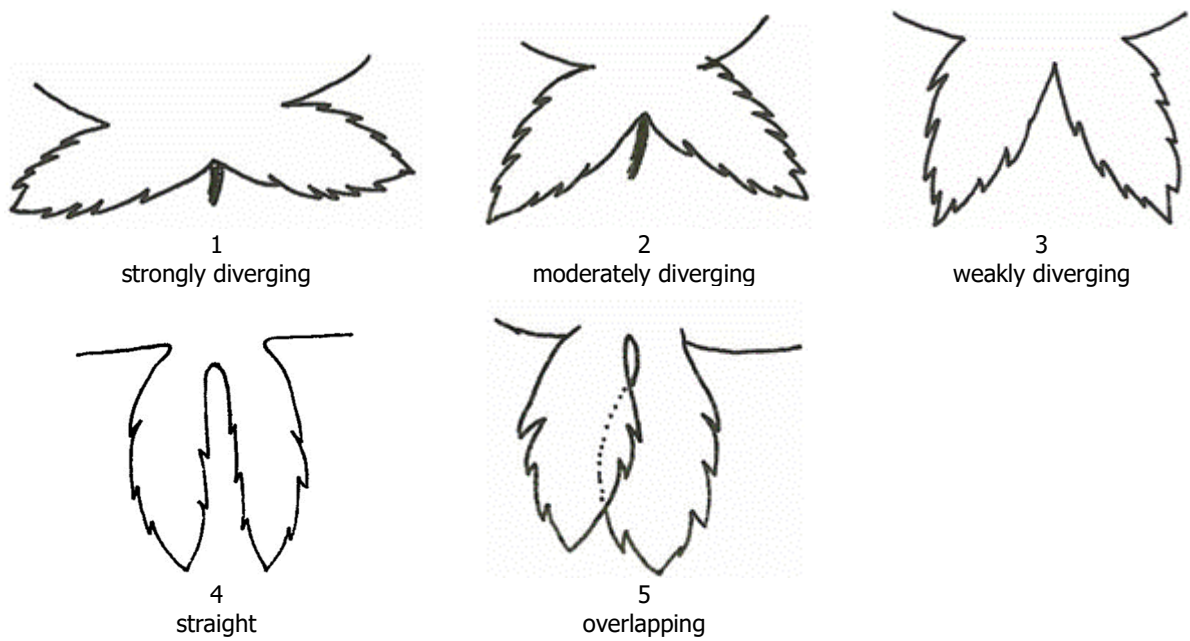


4
overlapping

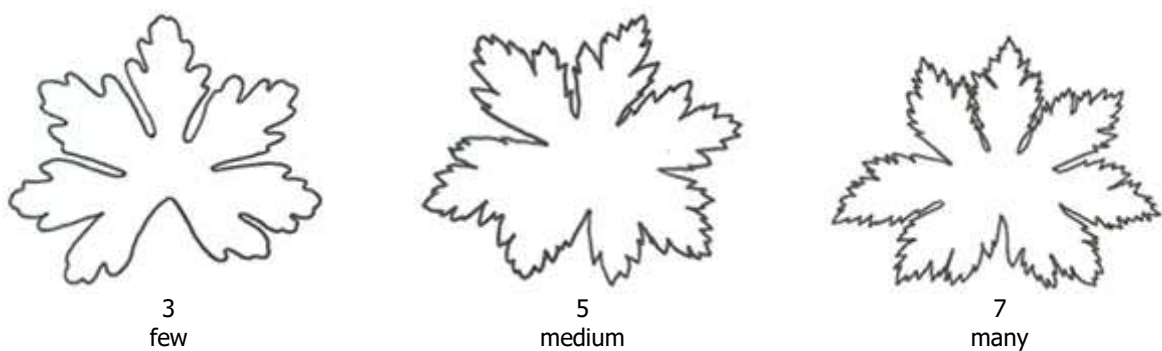
Ad. 17: Leaf: shape of lobe apex



Ad. 18: Leaf: basal lobes



Ad. 19: Leaf: number of incisions of margin



Ad. 20: Leaf: depth of incisions of margin



3
shallow

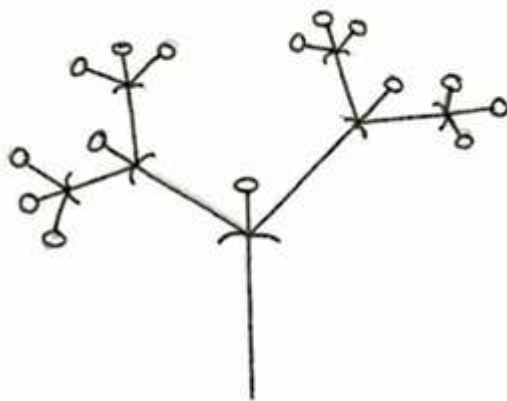


5
medium

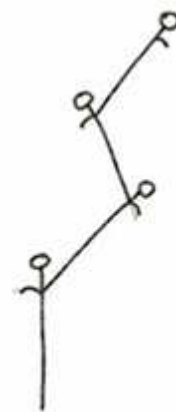


7
deep

Ad. 21: Flowering stem: branching habit

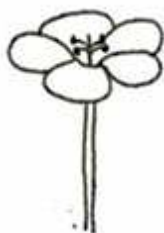


1
laterals branching both sides



2
laterals branching on side only

Ad. 23: Flower: attitude



1
upwards



2
slightly outwards



3
strongly outwards



4
downwards

Ad. 24: Flower: type

A single flower has one whorl containing 5 petals, a double flower has more than one whorl of petals or has petaloids in addition to the whorl of petals.



1
single



2
double

Ad. 26: Only varieties with flower type: single: Flower: profile in cross section



1
strongly concave



2
moderately concave



3
weakly concave



4
flat



5
weakly convex



6
moderately convex



7
strongly convex

Ad. 27: Petal: arrangement



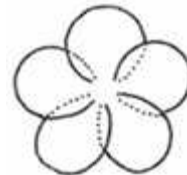
1
moderately separate



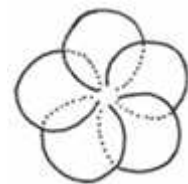
2
weakly separate



3
touching

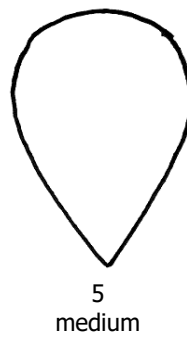
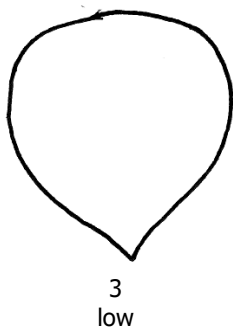


4
weakly overlapping



5
moderately overlapping

Ad. 30: Petal: length/width ratio



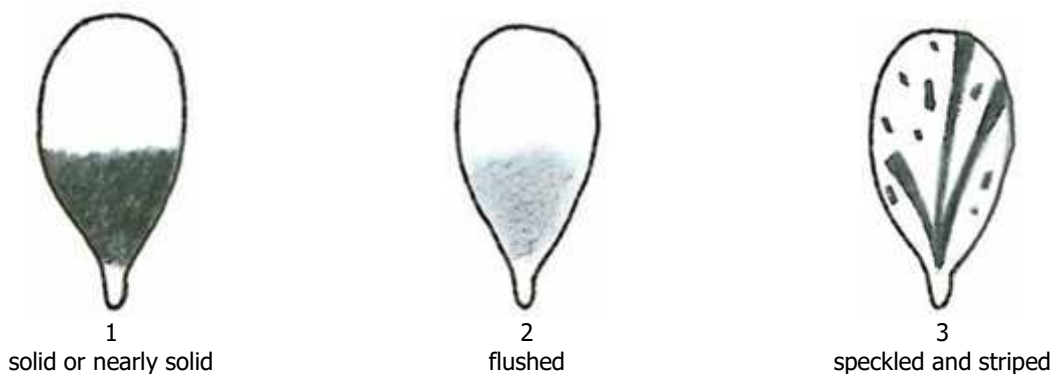
Ad. 31: Petal: shape of apex



Ad. 33: Petal: distribution of secondary colour



Ad. 35: Petal: pattern of secondary colour



Ad. 36: Petal: distribution of tertiary colour

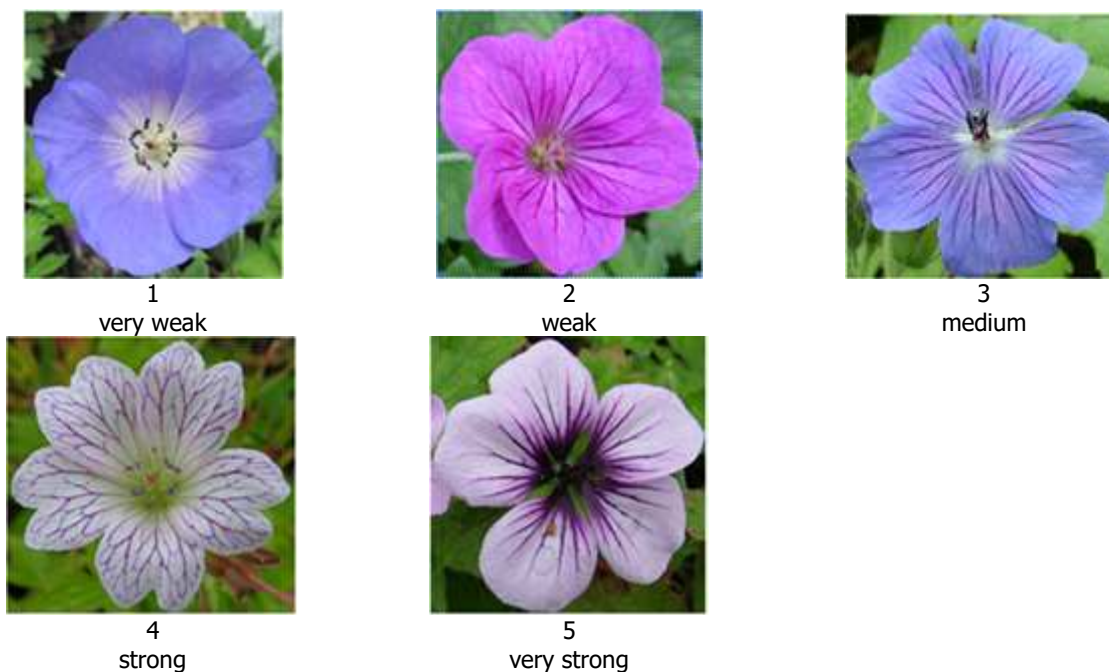
See Ad. 33.

Ad. 38: Petal: pattern of tertiary colour

See Ad. 35.

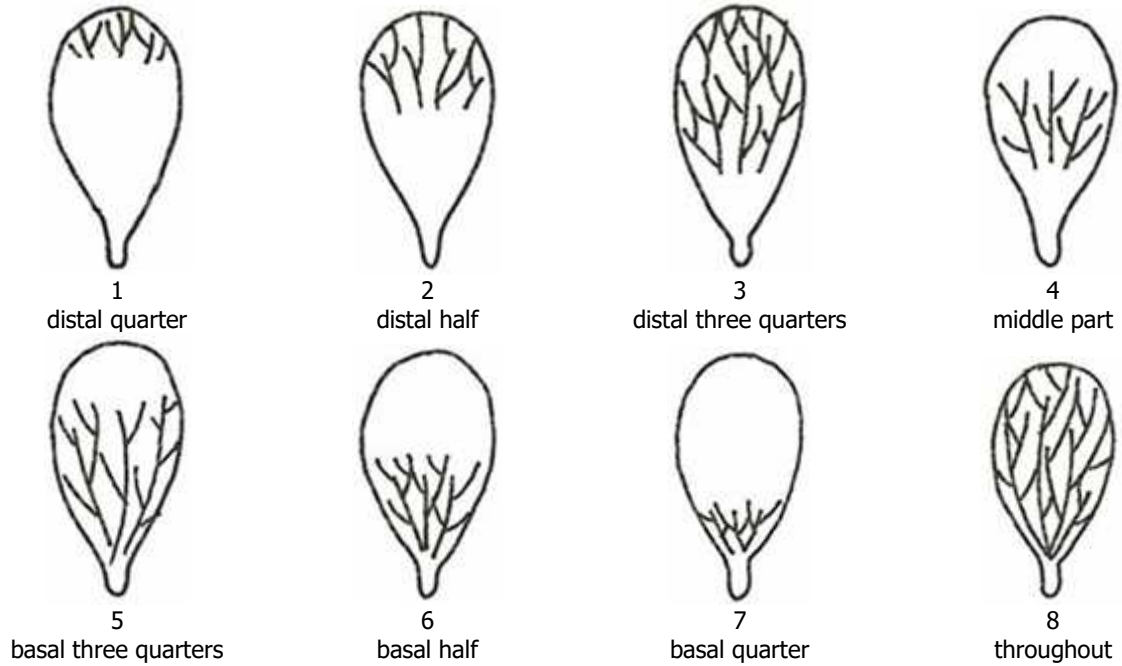
Ad. 39: Petal: conspicuousness of veins

The conspicuousness is defined as the contrast between the colour of the petal and the colour of the veins. A greater contrast in colour will give stronger conspicuousness of the veins.



Ad. 40: Petal: distribution of conspicuous veins

The characteristic should only be observed when the conspicuousness of veins (Characteristic 46) is weak or higher. Only the conspicuous part of the veins should be considered.



Ad. 41: Petal: colour of veins

The characteristic should only be observed when the conspicuousness of veins (characteristic 39) is weak or higher. Only the conspicuous part of the veins should be considered.

9. LITERATURE

Bath, T., Jones, J., 1994: *The Gardener's Guide to Growing Hardy Geraniums*. David and Charles. Newton Abbot, Devon, GB.

Bendtsen, B. H., 2005: *Gardening with Hardy Geraniums*. Timber Press. Portland, Oregon, US.

Hibberd, D., 2003: *RHS Wisley Handbook Hardy Geraniums*. Octopus Publishing Group. London, GB.

Yeo, P. F., 1992: *Hardy Geraniums*. B. T. Batsford Ltd. London, GB.

10. TECHNICAL QUESTIONNAIRE

The Technical Questionnaire is available on the CPVO website under the following reference:
CPVO-TQ/330/1