

## **PROTOCOL FOR DISTINCTNESS, UNIFORMITY AND STABILITY TESTS**

***Heuchera* L.; x*Heucherella* H.R. Wehrh.**

**HEUCHERA, HEUCHERELLA**

UPOV Code: HEUCH; HEUCL

**Adopted on 28/11/2012**

**Entry into force on 28/11/2012**

## **I SUBJECT OF THE PROTOCOL**

The protocol describes the technical procedures to be followed in order to meet the Council Regulation (EC) N°2100/94 on Community Plant Variety Rights. The technical procedures have been agreed by the Administrative Council and are based on general UPOV Document TG/1/3 and UPOV Guideline TG/280/1 dated 28/03/2012 for the conduct of tests for Distinctness, Uniformity and Stability. This protocol applies to all vegetatively propagated varieties of *Heuchera* L. and *xHeucherella* H. R. Wehrh.

## **II SUBMISSION OF PLANT MATERIAL**

### 1. The Community Plant Variety Office (CPVO) is responsible for informing the applicant of

- the closing date for the receipt of plant material;
- the minimum amount and quality of plant material required;
- the examination office to which material is to be sent.

The applicant is responsible for ensuring compliance with any customs and plant health requirements.

### 2. Final dates for receipt of documentation and material by the Examination Office

The final dates for receipt of requests, technical questionnaires and the final date or submission period for plant material will be decided by the CPVO and each Examination Office chosen.

The Examination Office is responsible for immediately acknowledging the receipt of requests for testing, and technical questionnaires. If no or unsatisfactory plant material is submitted the CPVO should be informed as soon as possible.

### 3 Plant material requirements

Information with respect to closing dates and submission requirements of plant material for technical examination of varieties can be found on the CPVO website ([www.cpvo.europa.eu](http://www.cpvo.europa.eu)) and in the special Issue S2 of the Official Gazette of the Office.

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

The plant material must not have undergone any treatment unless the CPVO and the examination office allow or request such treatment. If it has been treated, full details of the treatment must be given.

Labelling of sample: ..... - Species  
- File number of the application allocated by the CPVO  
- Breeder's reference  
- Examination reference (if known)  
- Name of applicant  
- The phrase "On request of the CPVO"

## **III CONDUCT OF TESTS**

### 1. Variety collection

A variety collection will be maintained for the purpose of establishing distinctness of the candidate varieties in test. A variety collection may contain both living material and descriptive information. A variety will be included in a reference collection only if plant material is available to make a technical examination.

Pursuant to Article 7 of Council Regulation No. 2100/94, the basis for a collection should be the following:

- varieties listed or protected at the EU level;
- varieties protected in other UPOV Member States;
- any other variety in common knowledge.

It is the responsibility of Examination Office to keep the variety collection up to date.

## 2. Material to be examined

Candidate varieties will be directly compared with other candidates for Community plant variety rights tested at the same Examination Office, and with appropriate varieties in the variety collection. When necessary an Examination Office may also include other candidates and varieties.

## 3. Characteristics to be used

The characteristics to be used in DUS tests and preparation of descriptions shall be those referred to in Annex I. 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. In the latter case, the CPVO should be informed. In addition the existence of some other regulation e.g. plant health, may make the observation of the characteristic impossible.

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.

## 4. Grouping of varieties

The varieties and candidates to be compared will be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety and which in their various states of expression are fairly evenly distributed throughout the collection. In the case of continuous grouping characteristics overlapping states of expression between adjacent groups is required to reduce the risks of incorrect allocation of candidates to groups. The characters used for grouping are the following:

### a) Fully expanded leaf blade: colour covering the greatest surface area, with the following groups:

- |         |               |
|---------|---------------|
| Gr. 1:  | white         |
| Gr. 2:  | light yellow  |
| Gr. 3:  | medium yellow |
| Gr. 4:  | yellow green  |
| Gr. 5:  | light green   |
| Gr. 6:  | medium green  |
| Gr. 7:  | dark green    |
| Gr. 8:  | yellow brown  |
| Gr. 9:  | pink          |
| Gr. 10: | red           |
| Gr. 11: | red brown     |
| Gr. 12: | brown         |
| Gr. 13: | purple        |
| Gr. 14: | grey purple   |
| Gr. 15: | grey green    |
| Gr. 16: | grey          |
| Gr. 17: | blackish      |

b) Fully expanded leaf blade: colour covering the next greatest surface area, with the following groups:

Gr. 1:	white
Gr. 2:	light yellow
Gr. 3:	medium yellow
Gr. 4:	yellow green
Gr. 5:	light green
Gr. 6:	medium green
Gr. 7:	dark green
Gr. 8:	yellow brown
Gr. 9:	pink
Gr. 10:	red
Gr. 11:	red brown
Gr. 12:	brown
Gr. 13:	purple
Gr. 14:	grey purple
Gr. 15:	grey green
Gr. 16:	grey
Gr. 17:	blackish

c) Flower: colour of outer surface (characteristic 64), with the following groups:

Gr. 1:	greenish
Gr. 2:	white
Gr. 3:	cream
Gr. 4:	light pink
Gr. 5:	medium pink
Gr. 6:	dark pink
Gr. 7:	red

#### 5. Trial designs and growing conditions

The minimum duration of tests should normally be a single growing cycle if the results on distinctness and uniformity are conclusive. Tests will be carried out under conditions ensuring normal growth.

The test design is as follows:

Each test should be designed to result in a total of at least 10 plants.

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.

Unless otherwise indicated, all observations should be made on 10 plants or parts taken from each of 10 plants.

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

#### 6. Special tests

In accordance with Article 83(3) of Council Regulation No. 2100/94 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.

7. Standards for decisions

a) **Distinctness**

A candidate variety will be considered to be distinct if it meets the requirements of Article 7 of Council Regulation No. 2100/94.

b) **Uniformity**

For the assessment of uniformity a population standard of 1% with an acceptance probability of at least 95% should be applied. In the case of a sample size between 6 and 35 plants, 1 off-type is allowed.

c) **Stability**

A candidate will be considered to be sufficiently stable when there is no evidence to indicate that it lacks uniformity.

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

#### **IV REPORTING OF RESULTS**

After each growing cycle the results will be summarised and reported to the CPVO in the form of a UPOV model interim report in which any problems will be indicated under the headings distinctness, uniformity and stability. Candidates may meet the DUS standards after one growing cycle but in some cases two or more growing cycles may be required. When tests are completed the results will be sent by the Examination Office to the CPVO in the form of a UPOV model final report.

If it is considered that the candidate complies with the DUS standards, the final report will be accompanied by a variety description in the format recommended by UPOV. If not the reasons for failure and a summary of the test results will be included with the final report.

The CPVO must receive interim reports and final reports by the date agreed between the CPVO and the examination office.

Interim reports and final examination reports shall be signed by the responsible member of the staff of the Examination Office and shall expressly acknowledge the exclusive rights of disposal of CPVO.

#### **V LIAISON WITH THE APPLICANT**

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 agreement, the applicant may be directly informed at the same time as the CPVO particularly if a visit to the trial is advisable.

The interim report and final report shall be sent by the Examination Office to the CPVO.

## **VI ENTRY INTO FORCE**

The present protocol enters into force on **28.11.2012**. Any ongoing DUS examination of candidate varieties started before the aforesaid date will not be affected by the approval of the new 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.

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## ANNEXES TO FOLLOW

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#### Legend:

- (+) See Explanations on the Table of Characteristics
- (a)-(h) See Explanations on the Table of Characteristics
- G Grouping characteristics
- (1) The characteristic only applies to varieties in Group A
- (2) The characteristic only applies to varieties in Group B

#### Types of expression of characteristics:

- QL Qualitative characteristic
- QN Quantitative characteristic
- PQ Pseudo-qualitative characteristic

#### Type of 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

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## ANNEX I

TABLE OF CHARACTERISTICS TO BE USED IN DUS-TEST AND PREPARATION OF DESCRIPTION

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>1.</b>	<b>1.</b> (* )	<b>VG/MG</b>	<b>Plant: height</b>		
(+)	(+)	(a)	Short	Firebird	3
<b>QN</b>	<b>QN</b>		Medium	Blackout	5
			Tall	Bronze Beauty	7
<b>2.</b>	<b>2.</b>	<b>VG/MG</b>	<b>Plant: width</b>		
(+)	(+)	(a)	Narrow	Plum Royale	3
<b>QN</b>	<b>QN</b>		medium	Blackout	5
			broad	Solar Power	7
<b>3.</b>	<b>3.</b> (* )	<b>VG</b>	<b>Plant: density of foliage</b>		
<b>QN</b>	<b>QN</b>	(a)	sparse	Sugar Plum	3
			medium	Mahogany	5
			dense	Brass Lantern	7
<b>4.</b>	<b>4.</b> (* )	<b>VG</b>	<b>Young leaf blade: colour one</b>		
(+)	(+)	(b)	RHS Colour Chart (indicate reference number)		
<b>PQ</b>	<b>PQ</b>	(c) (d)			
<b>5.</b>	<b>5.</b> (* )	<b>VG</b>	<b>Young leaf blade: colour one: distribution</b>		
(+)	(+)	(b)	along veins		1
<b>PQ</b>	<b>PQ</b>	(c)	along veins and on margin		2
		(d)	between veins throughout		3
			between veins in central zone		4
			between veins in intermediate zone		5
			between veins and on margin		6
			marginal zone		7
			throughout		8



CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>6.</b>	<b>6.</b> <b>(*)</b>	<b>VG</b>	<b>Young leaf blade: colour one: pattern</b>		
<b>(+)</b>	<b>(+)</b>	<b>(b)</b>	flushed		1
<b>PQ</b>	<b>PQ</b>	<b>(c)</b>	dotted		2
		<b>(d)</b>	blotched		3
			irregular		4
			solid or nearly solid		5
<b>7.</b>	<b>7.</b> <b>(*)</b>	<b>VG</b>	<b>Young leaf blade: colour one: total area</b>		
<b>(+)</b>	<b>(+)</b>	<b>(b)</b>	small		3
<b>QN</b>	<b>QN</b>	<b>(c)</b>	medium		5
		<b>(d)</b>	large		7
<b>8.</b>	<b>8.</b> <b>(*)</b>	<b>VG</b>	<b>Young leaf blade: colour two</b>		
<b>(+)</b>	<b>(+)</b>	<b>(b)</b>	RHS Colour Chart (indicate reference number)		
<b>PQ</b>	<b>PQ</b>	<b>(c)</b>			
		<b>(d)</b>			
<b>9.</b>	<b>9.</b> <b>(*)</b>	<b>VG</b>	<b>Young leaf blade: colour two: distribution</b>		
<b>(+)</b>	<b>(+)</b>	<b>(b)</b>	none		1
<b>PQ</b>	<b>PQ</b>	<b>(c)</b>	along veins		2
		<b>(d)</b>	along veins and on margin		3
			between veins throughout		4
			between veins in central zone		5
			between veins in intermediate zone		6
			between veins and on margin		7
			marginal zone		8
			throughout		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>10.</b>	<b>10.</b> (* )	<b>VG</b>	<b>Young leaf blade: colour two: pattern</b>		
(+)	(+)	(b)	flushed		1
<b>PQ</b>	<b>PQ</b>	(c)	dotted		2
		(d)	blotched		3
			irregular		4
			solid or nearly solid		5
<b>11.</b>	<b>11.</b> (* )	<b>VG</b>	<b>Young leaf blade: colour two: total area</b>		
(+)	(+)	(b)	small		3
<b>QN</b>	<b>QN</b>	(c)	medium		5
		(d)	large		7
<b>12.</b>	<b>12.</b> (* )	<b>VG</b>	<b>Young leaf blade: colour three</b>		
(+)	(+)	(b)	RHS Colour Chart (indicate reference number)		
<b>PQ</b>	<b>PQ</b>	(c)			
		(d)			
<b>13.</b>	<b>13.</b> (* )	<b>VG</b>	<b>Young leaf blade: colour three: distribution</b>		
(+)	(+)	(b)	none		1
<b>PQ</b>	<b>PQ</b>	(c)	along veins		2
		(d)	along veins and on margin		3
			between veins throughout		4
			between veins in central zone		5
			between veins in intermediate zone		6
			between veins and on margin		7
			marginal zone		8
			throughout		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>14.</b>	<b>14.</b> (*)	<b>VG</b>	<b>Young leaf blade: colour three: pattern</b>		
(+)	(+)	(b)	flushed		1
<b>PQ</b>	<b>PQ</b>	(c)	dotted		2
		(d)	blotched		3
			irregular		4
			solid or nearly solid		5
<b>15.</b>	<b>15.</b> (*)	<b>VG</b>	<b>Young leaf blade: colour three: total area</b>		
(+)	(+)	(b)	small		3
<b>QN</b>	<b>QN</b>	(c)	medium		5
		(d)	large		7
<b>16.</b>	<b>16.</b> (*)	<b>VG</b>	<b>Young leaf blade: colour four</b>		
(+)	(+)	(b)	RHS Colour Chart (indicate reference number)		
<b>PQ</b>	<b>PQ</b>	(c)			
		(d)			
<b>17.</b>	<b>17.</b> (*)	<b>VG</b>	<b>Young leaf blade: colour four: distribution</b>		
(+)	(+)	(b)	none		1
<b>PQ</b>	<b>PQ</b>	(c)	along veins		2
		(d)	along veins and on margin		3
			between veins throughout		4
			between veins in central zone		5
			between veins in intermediate zone		6
			between veins and on margin		7
			marginal zone		8
			throughout		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>18.</b>	<b>18.</b> (*)	<b>VG</b>	<b>Young leaf blade: colour four: pattern</b>		
(+)	(+)	(b)	flushed		1
<b>PQ</b>	<b>PQ</b>	(c)	dotted		2
		(d)	blotched		3
			irregular		4
			solid or nearly solid		5
<b>19.</b>	<b>19.</b> (*)	<b>VG</b>	<b>Young leaf blade: colour four: total area</b>		
(+)	(+)	(b)	small		3
<b>QN</b>	<b>QN</b>	(c)	medium		5
		(d)	large		7
<b>20.</b>	<b>20.</b> (*)	<b>VG/MG</b>	<b>Petiole: length</b>		
<b>QN</b>	<b>QN</b>	(e)	short	Firebird	3
			medium	Mahogany	5
			long	Brass Lantern	7
<b>21.</b>	<b>21.</b>	<b>VG</b>	<b>Petiole: pubescence</b>		
<b>QN</b>	<b>QN</b>	(e)	absent or very sparse	Sashay	1
			sparse	Plum Royale	2
			medium	French Quarter	3
			dense	Blackout	4
<b>22.</b>	<b>22.</b> (*)	<b>VG</b>	<b>Petiole: main colour</b>		
(+)	(+)	(e)	RHS Colour Chart (indicate reference number)		
<b>PQ</b>	<b>PQ</b>				
<b>23.</b>	<b>23.</b> (*)	<b>VG/MS</b>	<b>Leaf blade: length</b>		
(+)	(+)	(e)	short	Firebird	3
<b>QN</b>	<b>QN</b>		medium	Blackout	5
			long	Solar Power	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>24.</b>	<b>24.</b> (* )	<b>VG/MS</b>	<b>Leaf blade: width</b>		
(+)	(+)	(e)	narrow	Firebird	3
<b>QN</b>	<b>QN</b>		medium	Blackout	5
			broad		7
<b>25.</b>	<b>25.</b> (* )	<b>VG/MS</b>	<b>Leaf blade: length/width ratio</b>		
<b>QN</b>	<b>QN</b>	(e)	very slightly compressed	Blood Red	1
			roundish	Blackout	3
			very slightly elongated	Plum Royale	5
			slightly elongated	Stoplight	7
			moderately elongated	Green Ivory	9
<b>26.</b>	<b>26.</b>	<b>VG</b>	<b>Leaf blade: shape of apex</b>		
(+)	(+)	(c)	acute	Blackout	1
<b>PQ</b>	<b>PQ</b>	(e)	obtuse	Stoplight	2
			rounded	Mahogany	3
<b>27.</b>	<b>27.</b> (* )	<b>VG</b>	<b>Leaf blade: lobing</b>		
(+)	(+)	(c)	absent or very shallow	Fairy Cups	1
<b>QN</b>	<b>QN</b>	(e)	shallow	Blood Red	3
			medium	Sugar Plum	5
			deep	Solar Power	7
<b>28.</b>	<b>28.</b> (* )	<b>VG</b>	<b><u>Heucherella only</u>: Leaf blade: length of terminal lobe relative to total length</b>		
(+)	(+)	(c)	short		3
<b>QN</b>	<b>QN</b>	(e)	medium	Tapestry	5
			long	Alabama Sunrise	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>29.</b>	<b>29. (*)</b>	<b>VG</b>	<b>Leaf blade: number of indentations of margin</b>		
(+)	(+)	(c)	absent or very few	Fairy Cups	1
<b>QN</b>	<b>QN</b>	<b>(e)</b>	few	Blood Red	2
			medium	Sugar Plum	3
			many	Bronze Beauty	4
			very many	Pistache	5
<b>30.</b>	<b>30. (*)</b>	<b>VG</b>	<b>Leaf blade: depth of indentation of margin</b>		
<b>QN</b>	<b>QN</b>	<b>(c)</b>	very shallow	Blood Red	1
		<b>(e)</b>	shallow	Pistache	2
			medium	Solar Power	3
			deep	Blackout	4
			very deep	Sashay	5
<b>31.</b>	<b>31. (*)</b>	<b>VG</b>	<b>Leaf blade: undulation of margin</b>		
(+)	(+)	(c)	absent or very weak	Stoplight	1
<b>QN</b>	<b>QN</b>	<b>(e)</b>	weak	TNHEU041	3
			medium	Lime Rickey	5
			strong	Chocolate Ruffles	7
<b>32.</b>	<b>32.</b>	<b>VG</b>	<b>Leaf blade: rugosity</b>		
(+)	(+)	(c)	absent or very weak	Pistache	1
<b>QN</b>	<b>QN</b>	<b>(e)</b>	weak	Brass Lantern	3
			medium	Autumn Leaves	5
			strong	Dark Inn	7
<b>33.</b>	<b>33. (*)</b>	<b>VG</b>	<b>Leaf blade: glossiness</b>		
<b>QN</b>	<b>QN</b>	<b>(c)</b>	absent or very weak	Pistache	1
		<b>(e)</b>	weak	Mahogany	2
			medium	Blackout	3
			strong	Obsidian	4

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>34.</b>	<b>34.</b>	<b>VG</b>	<b>Leaf blade: pubescence</b>		
<b>QN</b>	<b>QN</b>	<b>(c)</b>	absent or very sparse	Mahogany	1
		<b>(e)</b>	sparse	Plum Royale	2
			medium		3
			dense	Caramel	4
<b>35.</b>	<b>35. (*)</b>	<b>VG</b>	<b>Leaf blade: pubescence of the <u>lower</u> surface</b>		
<b>QN</b>	<b>QN</b>	<b>(e)</b>	absent or very sparse	Stoplight	1
			sparse	Brass Lantern	2
			medium	Pistache	3
			dense		4
<b>36.</b>	<b>36. (*)</b>	<b>VG (c)</b>	<b>Leaf blade: colour one</b>		
<b>(+)</b>	<b>(+)</b>	<b>(d)</b>	RHS Colour Chart (indicate reference number)		
<b>PQ</b>	<b>PQ</b>	<b>(e)</b>			
<b>37.</b>	<b>37. (*)</b>	<b>VG</b>	<b>Leaf blade: colour one: distribution</b>		
<b>(+)</b>	<b>(+)</b>	<b>(c)</b>	along veins		1
<b>PQ</b>	<b>PQ</b>	<b>(d)</b>	along veins and on margin		2
		<b>(e)</b>	between veins throughout		3
			between veins in central zone		4
			between veins in intermediate zone		5
			between veins and on margin		6
			marginal zone		7
			throughout		8

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>38.</b>	<b>38.</b> (* )	<b>VG</b>	<b>Leaf blade: colour one: pattern</b>		
(+)	(+)	(c)	flushed		1
<b>PQ</b>	<b>PQ</b>	(d)	dotted		2
		(e)	blotched		3
			irregular		4
			solid or nearly solid		5
<b>39.</b>	<b>39.</b> (* )	<b>VG</b>	<b>Leaf blade: colour one: total area</b>		
(+)	(+)	(c)	small		3
<b>QN</b>	<b>QN</b>	(d)	medium		5
		(e)	large		7
<b>40.</b>	<b>40.</b> (* )	<b>VG</b> (c)	<b>Leaf blade: colour two</b>		
(+)	(+)	(d)	RHS Colour Chart (indicate reference number)		
<b>PQ</b>	<b>PQ</b>	(e)			
<b>41.</b>	<b>41.</b> (* )	<b>VG</b>	<b>Leaf blade: colour two: distribution</b>		
(+)	(+)	(c)	none		1
<b>PQ</b>	<b>PQ</b>	(d)	along veins		2
		(e)	along veins and on margin		3
			between veins throughout		4
			between veins in central zone		5
			between veins in intermediate zone		6
			between veins and on margin		7
			marginal zone		8
			throughout		9



CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>42.</b>	<b>42.</b> (*)	<b>VG</b>	<b>Leaf blade: colour two: pattern</b>		
(+)	(+)	(c)	flushed		1
<b>PQ</b>	<b>PQ</b>	(d)	dotted		2
		(e)	blotched		3
			irregular		4
			solid or nearly solid		5
<b>43.</b>	<b>43.</b> (*)	<b>VG</b>	<b>Leaf blade: colour two: total area</b>		
(+)	(+)	(c)	small		3
<b>QN</b>	<b>QN</b>	(d)	medium		5
		(e)	large		7
<b>44.</b>	<b>44.</b> (*)	<b>VG</b> (c)	<b>Leaf blade: colour three</b>		
(+)	(+)	(d)	RHS Colour Chart (indicate reference number)		
<b>PQ</b>	<b>PQ</b>	(e)			
<b>45.</b>	<b>45.</b> (*)	<b>VG</b>	<b>Leaf blade: colour three: distribution</b>		
(+)	(+)	(c)	none		1
<b>PQ</b>	<b>PQ</b>	(d)	along veins		2
		(e)	along veins and on margin		3
			between veins throughout		4
			between veins in central zone		5
			between veins in intermediate zone		6
			between veins and on margin		7
			marginal zone		8
			throughout		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>46.</b>	<b>46.</b> (*)	<b>VG</b>	<b>Leaf blade: colour three: pattern</b>		
(+)	(+)	(c)	flushed		1
<b>PQ</b>	<b>PQ</b>	(d)	dotted		2
		(e)	blotched		3
			irregular		4
			solid or nearly solid		5
<b>47.</b>	<b>47.</b> (*)	<b>VG</b>	<b>Leaf blade: colour three: total area</b>		
(+)	(+)	(c)	small		3
<b>QN</b>	<b>QN</b>	(d)	medium		5
		(e)	large		7
<b>48.</b>	<b>48.</b> (*)	<b>VG</b> (c)	<b>Leaf blade: colour four</b>		
(+)	(+)	(d)	RHS Colour Chart (indicate reference number)		
<b>PQ</b>	<b>PQ</b>	(e)			
<b>49.</b>	<b>49.</b> (*)	<b>VG</b>	<b>Leaf blade: colour four: distribution</b>		
(+)	(+)	(c)	none		1
<b>PQ</b>	<b>PQ</b>	(d)	along veins		2
		(e)	along veins and on margin		3
			between veins throughout		4
			between veins in central zone		5
			between veins in intermediate zone		6
			between veins and on margin		7
			marginal zone		8
			throughout		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>50.</b>	<b>50.</b> (* )	<b>VG</b>	<b>Leaf blade: colour four: pattern</b>		
(+)	(+)	(c)	flushed		1
<b>PQ</b>	<b>PQ</b>	(d)	dotted		2
		(e)	blotched		3
			irregular		4
			solid or nearly solid		5
<b>51.</b>	<b>51.</b> (* )	<b>VG</b>	<b>Leaf blade: colour four: total area</b>		
(+)	(+)	(c)	small		3
<b>QN</b>	<b>QN</b>	(d)	medium		5
		(e)	large		7
<b>52.</b>	<b>52.</b> (* )	<b>VG</b>	<b>Leaf blade: colour of lower side (if significantly different from upper side)</b>		
<b>PQ</b>	<b>PQ</b>	(e)	RHS Colour Chart (indicate reference number)		
<b>53.</b>	<b>53.</b>	<b>VG</b>	<b>Flowering stem: attitude</b>		
(+)	(+)		upright	Greenfinch	1
<b>QN</b>	<b>QN</b>		semi-upright	Caramel	2
			spreading	Alabama Sunrise	3
<b>54.</b>	<b>54.</b> (* )	<b>VG/MG</b>	<b>Flowering stem: length</b>		
(+)	(+)		short	Mahogany	3
<b>QN</b>	<b>QN</b>		medium	Brass Lantern	5
			long	French Quarter	7
<b>55.</b>	<b>55.</b> (* )	<b>VG</b>	<b>Flowering stem: main colour</b>		
(+)	(+)		RHS Colour Chart (indicate reference number)		
<b>PQ</b>	<b>PQ</b>				

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>56.</b>	<b>56.</b> (* )	<b>VG/MS</b>	<b>Flowering stem: length of flowering part</b>		
(+)	(+)		short	Midnight Bayou	3
<b>QN</b>	<b>QN</b>		medium	Autumn Leaves	5
			long	Havana	7
<b>57.</b>	<b>57.</b> (* )	<b>VG/MS</b>	<b>Flowering stem: width of flowering part</b>		
(+)	(+)		narrow	Brass Lantern	3
<b>QN</b>	<b>QN</b>		medium	Lipstick	5
			broad	French Quarter	7
<b>58.</b>	<b>58.</b> (* )	<b>VG/MS</b>	<b>Flowering stem: length/width of flowering part</b>		
<b>QN</b>	<b>QN</b>		slightly elongated	Brass Lantern	3
			moderately elongated	Lipstick	5
			strongly elongated	Redstone Falls	7
<b>59.</b>	<b>59.</b> (* )	<b>VG</b>	<b>Flowering stem: density of flowers</b>		
<b>QN</b>	<b>QN</b>		sparse	White Marble	3
			medium	Solar Power	5
			dense	Vyking Ship	7
<b>60.</b>	<b>60.</b> (* )	<b>VG</b>	<b>Flower bud: colour</b>		
(+)	(+)		RHS Colour Chart (indicate reference number)		
<b>PQ</b>	<b>PQ</b>				
<b>61.</b>	<b>61.</b>	<b>VG</b>	<b>Flower: attitude</b>		
(+)	(+)		upwards	Rickard	1
<b>QN</b>	<b>QN</b>	<b>(f)</b>	semi-upwards	Firebird	2
			outwards	Coral Bouquet	3
			semi-downwards	White Marble	4
			downwards	Sugar Plum	5

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>62.</b>	<b>62.</b> (*)	<b>VG/MS</b>	<b>Flower: length</b>		
(+)	(+)	(f)	short	Brass Lantern	3
<b>QN</b>	<b>QN</b>		medium	Blood Red	5
			long	White Marble	7
<b>63.</b>	<b>63.</b> (*)	<b>VG/MS</b>	<b>Flower: width</b>		
(+)	(+)	(f)	narrow	Mahogany	3
<b>QN</b>	<b>QN</b>		medium	Firebird	5
			broad	Lipstick	7
<b>64.</b>	<b>64.</b> (*)	<b>VG</b>	<b>Flower: colour of outer surface</b>		
(+)	(+)				
<b>PQ</b>	<b>PQ</b>	(f)	RHS Colour Chart (indicate reference number)		
<b>G</b>					
<b>65.</b>	<b>65.</b>	<b>VG</b>	<b><u>Heucherella only</u>: Petal: colour of inner surface</b>		
(+)	(+)	(f)	white		1
<b>PQ</b>	<b>PQ</b>		cream		2
			pale pink		3

## EXPLANATIONS ON THE TABLE OF CHARACTERISTICS

### *Explanations covering several characteristics*

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

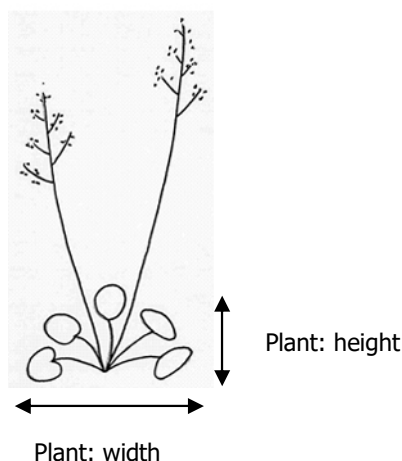
Characteristics containing the following key in the third column of the Table of Characteristics should be examined as indicated below:

- (a) To be observed on the leaf rosette, excluding the flowering stems.
- (b) To be observed on just expanded leaves of the current season.
- (c) Leaf blade characteristics should be observed on the upper surface unless otherwise indicated.
- (d) The colour of the leaf blade excludes the colour of the veins. Where the characteristic refers to colours as "one", "two" etc., they are to be recorded in the order that they appear on the RHS chart, i.e. colour one is the one with the lowest number, colour two with the second lowest and so on. For example, if the leaves are Green 137A dotted with White 155A, Green 137A will be colour one and White 155A colour two. If two colours are on the same leaf of the chart, for example Green 137A and Green 137D, 137A is regarded as the lower numbered colour. It should be noted that under this system, ranking is independent of surface area, so the colour covering the greatest surface area may be classified as colour three or four. The Guideline makes provision for four colours; if there are more, the colour[s] with the smallest surface area[s] should be discounted.
- (e) To be observed on fully expanded leaves of the current season.
- (f) To be observed on fully open flowers from the middle third of the flowering part of the flowering stem.

### *Explanations for individual characteristics*

Ad. 1: Plant: height

Ad. 2: Plant: width



Ad. 4 to 19: Young leaf blade: colour characteristics

Ad. 36 to 52: Leaf blade: colour characteristics

In Heuchera and Heucherella leaf colour is very significant to the overall appearance of the variety. Leaves often have several colours in different patterns and the expression of these colours and patterns can change from the young leaves to the fully expanded leaves.

This guideline allows the description of up to four colours using the RHS Colour Charts as well as the distributions, the patterns formed and the areas covered. This set of characteristics is observed on the young leaves and then repeated to describe the fully expanded leaves.

Although the colours are referred to as "colour one", "colour two", "colour three" and "colour four" in the headings, this does not indicate a ranking according to prominence or area covered. The order in which the colours should be observed is dictated by the order the colours appear in the RHS Colour Chart, as described in section 8.1(d).

Example varieties have not been provided for the leaf colour characteristics. This is because the number of combinations of observations that this guideline allows for, is larger than number of combinations seen. Providing example varieties for all states of expression in this case would be misleading.

In order to provide an illustration of the recording method, two worked examples are provided below. The first describes a leaf with only one colour, the second a leaf with several colours. In both cases these are described on the fully expanded leaf, but the method for the young leaf is identical.

Section 8.1(b) and (e) contains the instructions as to which material should be used for the observations.

Worked Example One – Pistache (variety with only one leaf colour)



- 36. Leaf blade: colour one – RHS Colour Chart – Yellow-Green 151C
- 37. Leaf blade: colour one: distribution – throughout (8)
- 38. Leaf blade: colour one: pattern – solid or nearly solid (5)
- 39. Leaf blade: colour one: total area – very large (9)
- 40. Leaf blade: colour two – RHS Colour Chart – not applicable
- 41. Leaf blade: colour two: distribution – none (1)
- 42. Leaf blade: colour two: pattern – not applicable
- 43. Leaf blade: colour two: total area – not applicable
- 44. Leaf blade: colour three – RHS Colour Chart – not applicable
- 45. Leaf blade: colour three: distribution – none (1)
- 46. Leaf blade: colour three: pattern – not applicable
- 47. Leaf blade: colour three: total area – not applicable
- 48. Leaf blade: colour four – RHS Colour Chart – not applicable
- 49. Leaf blade: colour four: distribution – none (1)
- 50. Leaf blade: colour four: pattern – not applicable
- 51. Leaf blade: colour four: total area – not applicable

Worked Example Two – Venus (variety with several leaf colors)



- 36. Leaf blade: colour one – RHS Colour Chart – Yellow-Green 144C
- 37. Leaf blade: colour one: distribution – marginal zone (7)
- 38. Leaf blade: colour one: pattern – solid or nearly solid (5)
- 39. Leaf blade: colour one: total area – very small to small (2)
- 40. Leaf blade: colour two – RHS Colour Chart – Greyed-Orange 176B
- 41. Leaf blade: colour two: distribution – along veins (2)
- 42. Leaf blade: colour two: pattern – solid or nearly solid (5)
- 43. Leaf blade: colour two: total area – small (3)
- 44. Leaf blade: colour three – RHS Colour Chart – Greyed-Orange 177D but more grey
- 45. Leaf blade: colour three: distribution – between veins in intermediate zone (6)
- 46. Leaf blade: colour three: pattern – solid or nearly solid (5)
- 47. Leaf blade: colour three: total area – large (7)
- 48. Leaf blade: colour four – RHS Colour Chart – not applicable
- 49. Leaf blade: colour four: distribution – none (1)
- 50. Leaf blade: colour four: pattern – not applicable
- 51. Leaf blade: colour four: total area – not applicable

The diagrams below show illustrations of the colour distributions and colour patterns



Ad. 5: Young leaf blade: colour one: distribution

Ad. 37: Leaf blade: colour one: distribution



1

along veins (red brown)



2

along veins and on margin (blackish)



3

between veins throughout (red pink)



4

between veins in central zone  
(grey)



5

between veins in intermediate zone  
(green)



6

between veins and on margin  
(yellow green)



7

marginal zone (red)



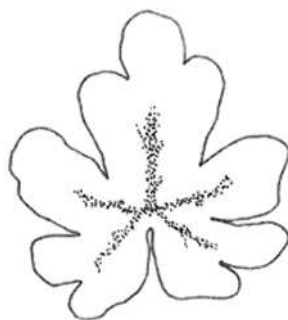
8

throughout (pink)

- Ad. 6: Young leaf blade: colour one: pattern
- Ad. 10: Young leaf blade: colour two: pattern
- Ad. 14: Young leaf blade: colour three: pattern
- Ad. 18: Young leaf blade: colour four: pattern
- Ad. 38: Leaf blade: colour one: pattern
- Ad. 42: Leaf blade: colour two: pattern
- Ad. 46: Leaf blade: colour three: pattern
- Ad. 50: Leaf blade: colour four: pattern



1  
flushed



2  
dotted



3  
blotched



4  
irregular



5  
solid or nearly solid

- Ad. 9: Young leaf blade: colour two: distribution  
Ad. 13: Young leaf blade: colour three: distribution  
Ad. 17: Young leaf blade: colour four: distribution  
Ad. 41: Leaf blade: colour two: distribution  
Ad. 45: Leaf blade: colour three: distribution  
Ad. 49: Leaf blade: colour four: distribution

The colour distributions described in these characteristics can be represented by the same diagrams as in Ad. 5 and Ad. 37. However the notes are different with the first as 'none', to allow for varieties that do not have multiple colours.



1

none (no additional colours)



2

along veins (red brown)



3

along veins and on margin (blackish)



4

between veins throughout  
(red pink)



5

between veins in central zone  
(grey)



6

between veins in intermediate zone  
(green)



7

between veins and on margin  
(yellow green)



8

marginal zone  
(red)



9

throughout  
(pink)

Ad. 22: Petiole: main colour

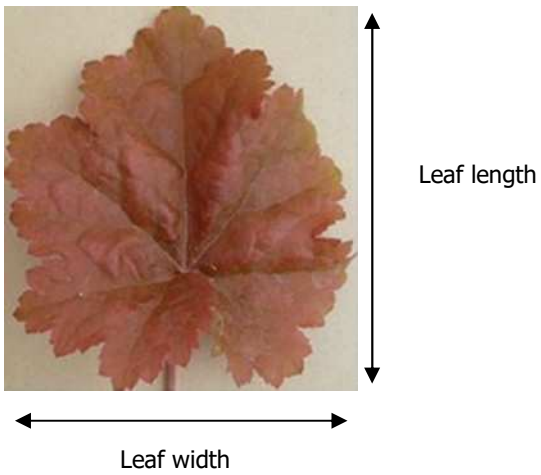
The main colour is the one covering the largest surface area.

Ad. 23: Leaf blade: length

The total length of the leaf should be observed, not the distance from the petiole to the apex.

Ad. 24: Leaf blade: width

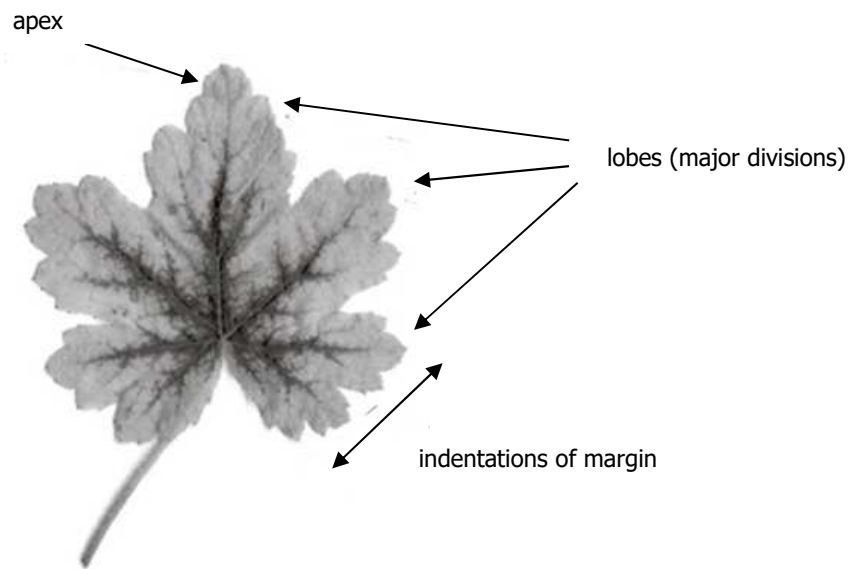
The natural width of the leaf should be observed.



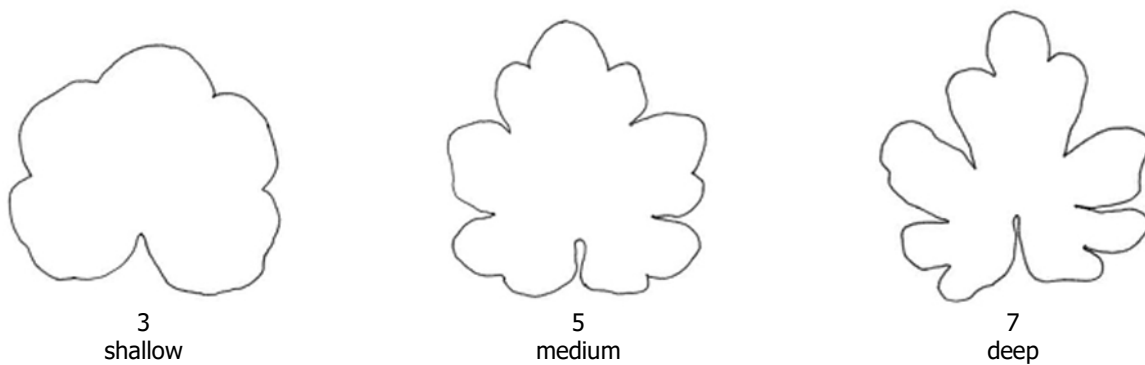
Ad. 26: Leaf blade: shape of apex

Ad. 27: Leaf blade: lobing

Ad. 29: Leaf blade: number of indentations of margin

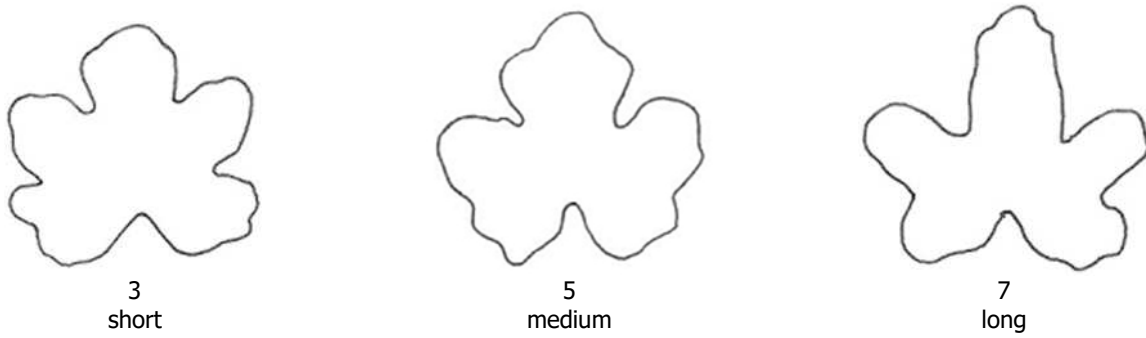


Ad. 27: Leaf blade: lobing

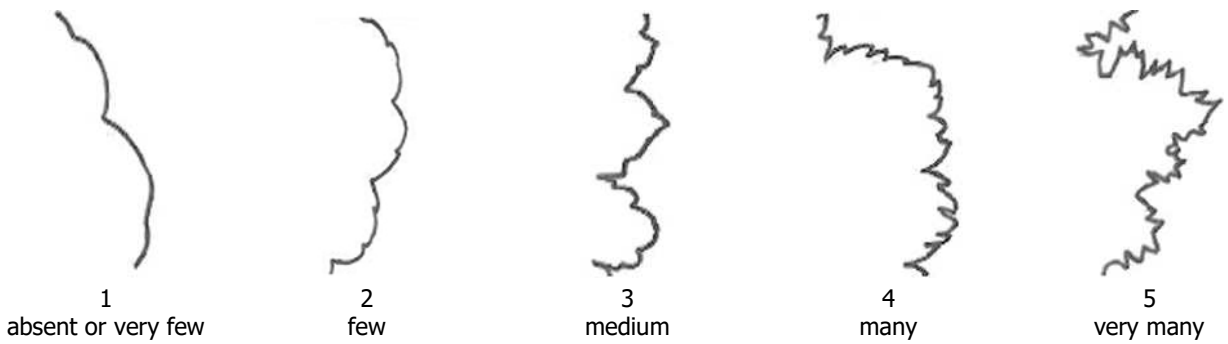




Ad. 28: Heucherella only: Leaf blade: length of terminal lobe relative to total length



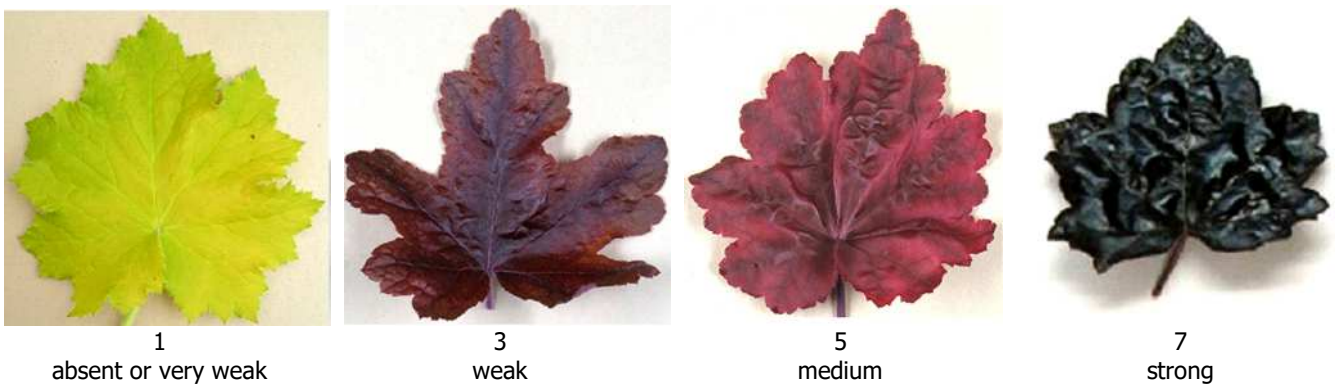
Ad. 29: Leaf blade: number of indentations of margin



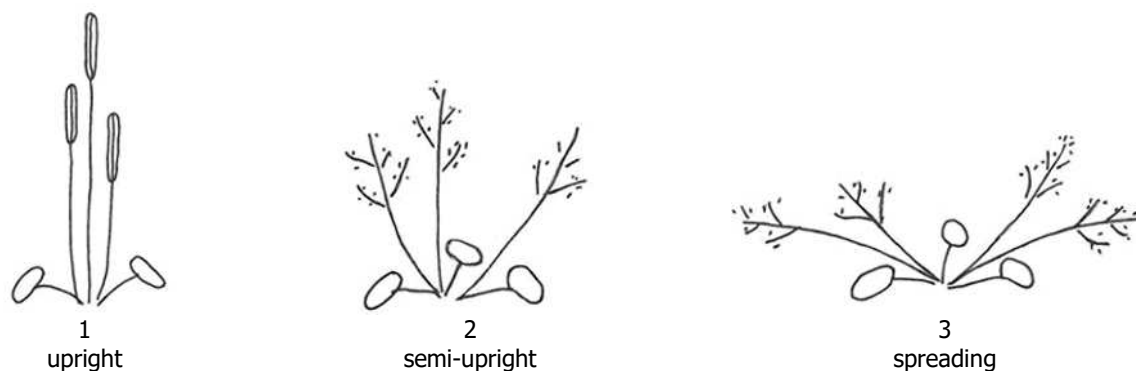
Ad. 31: Leaf blade: undulation of margin



Ad. 32: Leaf blade: rugosity



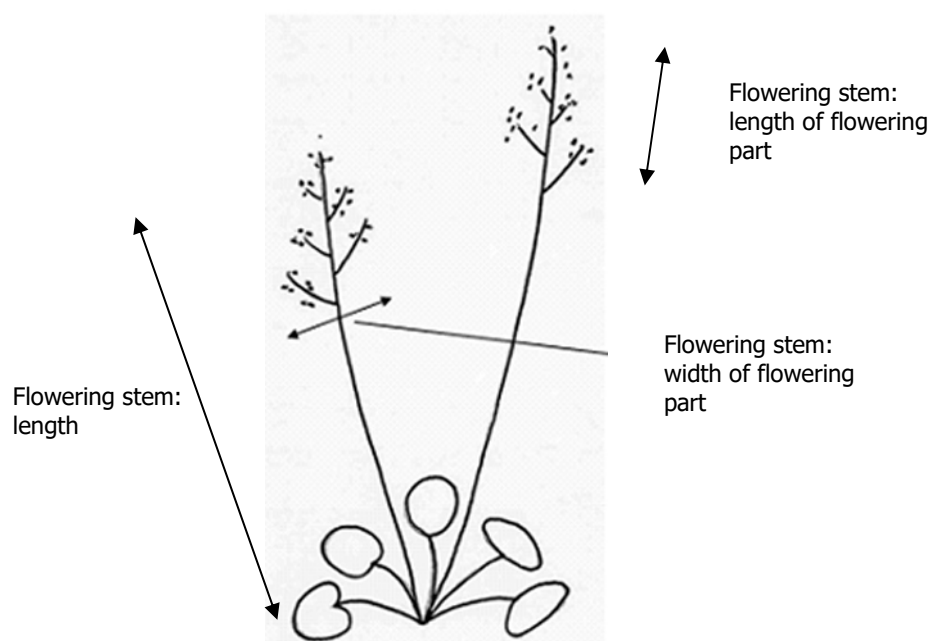
Ad. 53: Flowering stem: attitude



Ad. 54: Flowering stem: length

Ad. 56: Flowering stem: length of flowering part

Ad. 57: Flowering stem: width of flowering part



Ad. 54: Flowering stem: length

To be observed on the fully extended flowering stem.

Ad. 55: Flowering stem: main colour

To be observed immediately below the flowering part of the flowering stem. The main colour is the one covering the largest surface area.

Ad. 60: Flower bud: colour

To be observed on a fully developed flower bud just before opening.

Ad. 61: Flower: attitude

Flower attitude is described relative to the main flowering stem and excludes the angle of the pedicel.



1  
upwards



2  
semi-upwards



3  
outwards



4  
semi-downwards



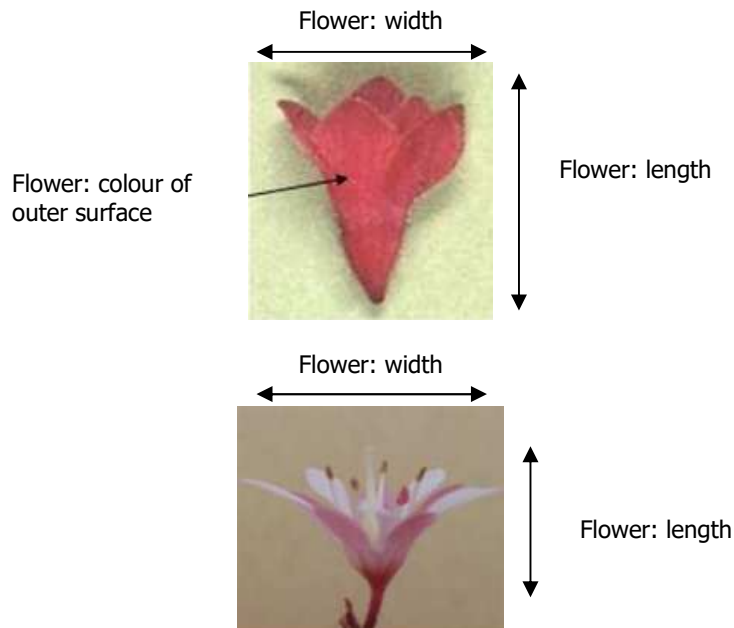
5  
downwards

Ad. 62: Flower: length

Ad. 63: Flower: width

Ad. 64: Flower: colour of outer surface

Note on the flower structure: In the flowers, the lower parts of the calyx, petals and anthers are fused together into a structure called the Hypanthium. At the base of each calyx lobe a small petal is attached, which may be vestigial or may project past the mouth of the flower. The petals are generally more prominent in Heucherella.



Ad. 65: Heucherella only: Petal: colour of inner surface



Petal : colour of inner surface

## **LITERATURE**

Heims, D., and Ware, G., 2005: Heucheras and Heucherellas, Coral Bells and Foamy Bells. Timber Press, Inc.. Oregon, US

Oliver, C. and M., 2006: Heuchera, Tiarella and Heucherella, A Gardener's Guide. B. T. Batsford Ltd.. London, GB



## **ANNEX II**

The Technical Questionnaire is available on the CPVO website under the following reference:  
CPVO-TQ/280/1