

UPOV

TG/HEUCH(proj.3)

ORIGINAL: English

DATE: 2010-08-10

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

HEUCHERA;
HEUCHERELLA

UPOV Code: HEUCH; HEUCL

Heuchera L.;
xHeucherella H. R. Wehrh.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

*prepared by an expert from the United Kingdom**to be considered by the**the Technical Working Party for Ornamental Plants and Forest Trees
at its forty-third session, to be held in Cuernavaca, Morelos State, Mexico,
from September 20 to 24, 2010*

Alternative Names: *

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Heuchera</i> L.	Heuchera	Heuchera	Purpurglöckchen	
<i>xHeucherella</i> H. R. Wehrh., <i>Heuchera x Tiarella</i>	Heucherella			

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.]

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
1. SUBJECT OF THESE TEST GUIDELINES.....	3
2. MATERIAL REQUIRED	3
3. METHOD OF EXAMINATION.....	3
3.1 Number of Growing Cycles	3
3.2 Testing Place	3
3.3 Conditions for Conducting the Examination.....	3
3.4 Test Design	4
3.5 Additional Tests	4
4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY	4
4.1 Distinctness	4
4.2 Uniformity.....	5
4.3 Stability	5
5. GROUPING OF VARIETIES AND ORGANIZATION OF THE GROWING TRIAL.....	6
6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS	7
6.1 Categories of Characteristics.....	7
6.2 States of Expression and Corresponding Notes.....	7
6.3 Types of Expression.....	8
6.4 Example Varieties	8
6.5 Legend.....	8
7. TABLE OF CHARACTERISTICS/TABLEAU DES CARACTERES/MERKMALSTABELLE/TABLA DE CARACTERES.....	9
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS	25
8.1 Explanations covering several characteristics	25
8.2 Explanations for individual characteristics	26
9. LITERATURE	33
10. TECHNICAL QUESTIONNAIRE	34

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Heuchera* L. and *xHeucherella* H. R. Wehrh., of the family *Saxifragaceae*.

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 young plants capable of expressing all relevant characteristics of the variety during the first growing cycle.

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

10 young plants.

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 *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 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 *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, all observations **for the purposes of distinctness** should be made on 10 plants or parts taken from each of 10 plants, 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 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 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 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) Fully expanded leaf blade: color covering the greatest surface area, with the following groups:

- Gr. 1: white
- Gr. 2: light yellow
- Gr. 3: 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: color covering the next greatest surface area, with the following groups:

- Gr. 1: white
- Gr. 2: light yellow
- Gr. 3: 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: color 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

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

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)-{h} See Explanations on the Table of Characteristics in Chapter 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8.

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. (*) (+)	Plant: height					
QN	(a) short				Strawberry Candy	3
	medium				Sparkling Burgundy	5
	tall				Caramel	7
2. (+)	Plant: width					
QN	(a) narrow				Strawberry Candy	3
	medium				Caramel	5
	broad				Alabama Sunrise	7
3.	Plant: density of foliage					
QN	(a) sparse				Frosted Violet Dream	3
	medium				Alabama Sunrise	5
	dense				Obsidian	7
4.	Young just expanded leaf blade: first color					
PQ	(b) RHS Colour Chart (c) (indicate reference (e) number)					

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
5.	Young just expanded leaf blade: first color: distribution						
(+)							
PQ	(b)	on veins				1	
	(c)	along veins			Strawberry Candy	2	
	(e)	on and along veins			Sparkling Burgundy	3	
		along veins and on margin				4	
		between veins throughout			Peach Melba	5	
		between veins in central zone				6	
		between veins in intermediate zone				7	
		marginal zone			Tapestry	8	
		throughout			Keylime Pie	9	
6.	Young just expanded leaf blade: first color: pattern						
(+)							
PQ	(b)	speckled				1	
	(c)	mottled				2	
	(e)	random/irregular				3	
		solid or nearly solid			Tapestry	4	
7.	Young just expanded leaf blade: first color: total area						
QN	(b)	small			Strawberry Candy	3	
	(c)	medium			Tapestry	5	
	(e)	large			Gold Strike	7	

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8.	Young just expanded leaf blade: second color					
PQ	(b) RHS Colour Chart (c) (indicate reference number) (e)					
9.	Young just expanded leaf blade: second color: distribution					
(+)						
PQ	(b) on veins				Tiramisu	1
	(c) along veins				Gold Strike	2
	(e) on and along veins				Tapestry	3
	along veins and on margin				Peach Melba	4
	between veins throughout				Sparkling Burgundy	5
	between veins in central zone					6
	between veins in intermediate zone					7
	marginal zone					8
	throughout					9
10.	Young just expanded leaf blade: second color: pattern					
(+)						
PQ	(b) speckled				Gold Strike	1
	(c) mottled					2
	(e) random/irregular					3
	solid or nearly solid				Strawberry Candy	4

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
11.	Young just expanded leaf blade: second color: total area						
QN	(b) small				Gold Strike	3	
	(c) medium				Tapestry	5	
	(e) large				Sparkling Burgundy	7	
12.	Young just expanded leaf blade: third color						
PQ	(b) RHS Colour Chart						
	(c) (indicate reference						
	(e) number)						
13.	Young just expanded leaf blade: third color: distribution						
(+)							
PQ	(b) on veins					1	
	(c) along veins					2	
	(e) on and along veins					3	
	along veins and on margin					4	
	between veins throughout					5	
	between veins in central zone					6	
	between veins in intermediate zone					7	
	marginal zone					8	
	throughout					9	

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
14.	Young just expanded leaf blade: third color: pattern					
(+)						
PQ	(b)	speckled				1
	(c)	mottled				2
	(e)	random/irregular				3
		solid or nearly solid				4
15.	Young just expanded leaf blade: third color: total area					
QN	(b)	small				3
	(c)	medium				5
	(e)	large				7
16.	Young just expanded leaf blade: fourth color					
PQ	(b)	RHS Colour Chart				
	(c)	(indicate reference				
	(e)	number)				

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17.	Young just expanded leaf blade: fourth color: distribution					
(+)						
PQ	(b)	on veins				1
	(c)	along veins				2
	(e)	on and along veins				3
		along veins and on margin				4
		between veins throughout				5
		between veins in central zone				6
		between veins in intermediate zone				7
		marginal zone				8
		throughout				9
18.	Young just expanded leaf blade: fourth color: pattern					
(+)						
PQ	(b)	speckled				1
	(c)	mottled				2
	(e)	random/irregular				3
		solid or nearly solid				4
19.	Young just expanded leaf blade: fourth color: total area					
QN	(b)	small				3
	(c)	medium				5
	(e)	large				7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20.	Petiole: length					
QN	(d) short					3
	medium					5
	long					7
21.	Petiole: pubescence					
QN	(d) absent or very sparse					1
	sparse					2
	medium					3
	dense					4
22. (*)	Petiole: main color					
PQ	(d) RHS Colour Chart (indicate reference number)					
23. (*)	Leaf blade: length					
QN	(d) short				Strawberry Candy	3
	medium				Sparkling Burgundy	5
	long				Caramel	7
24. (*)	Leaf blade: width					
QN	(d) narrow				Strawberry Candy	3
	medium				Plum Pudding	5
	broad				Beaujolais	7
25. (*)	Leaf blade: length/width ratio					
QN	(d) moderately compressed					3
	medium					5
	moderately elongated					7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26.	Leaf blade: shape of apex					
(+)						
PQ	(c)	acute			Autumn Haze	1
	(d)	obtuse			Stoplight	2
		rounded			Caramel	3
27.	Leaf blade: lobing					
(*)						
(+)						
QN	(c)	absent or very shallow				1
	(d)	shallow			Hollywood	3
		medium			Silver Light	5
		deep			Marmalade	7
28.	<u>x Heucherella only:</u> Leaf blade: length of terminal lobe relative to total length					
(*)						
(+)						
QN	(c)	short				3
	(d)	medium			Tapestry	5
		long			Alabama Sunrise	7
29.	Leaf blade: number of indentations of margin					
(+)						
QN	(c)	absent or very few				1
	(d)	few				3
		medium				5
		many				7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30. (*)	Leaf blade: depth of indentations of margin					
QN	(c)	shallow				3
	(d)	medium				5
		deep				7
31. (*)	Leaf blade: undulation of margin					
QN	(c)	absent or very weak				1
	(d)	weak				3
		medium			Beaujolais	5
		strong			Chocolate Ruffles	7
32.	Leaf blade: rugosity					
QN	(c)	absent or very weak				1
	(d)	weak				2
		medium				3
		strong			Dark Inn	4
33. (*)	Leaf blade: glossiness					
QN	(c)	absent or very weak			Caramel	1
	(d)	weak			Strawberry Candy	2
		medium			Peach Melba	3
		strong			Obsidian	4
34.	Leaf blade: pubescence					
QN	(c)	absent or very sparse			Obsidian	1
	(d)	sparse				2
		medium				3
		dense			Caramel	4

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
35. (*)	Leaf blade: pubescence of the lower surface					
QN	(d)	absent or very sparse				1
		sparse				2
		medium				3
		dense				4
36. (*)	Leaf blade: first color					
PQ	(c)	RHS Colour Chart				
	(d)	(indicate reference				
	(e)	number)				
37. (*) (+)	Leaf blade: first color: distribution					
PQ	(c)	on veins				1
	(d)	along veins				2
	(e)	on and along veins				3
		along veins and on margin				4
		between veins throughout				5
		between veins in central zone				6
		between veins in intermediate zone				7
		marginal zone				8
		throughout				9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
38. (*) (+)	Leaf blade: first color: pattern					
PQ	(c)					1
	(d)					2
	(e)					3
					solid or nearly solid	4
39. (*)	Leaf blade: first color: total area					
QN	(c)					3
	(d)					5
	(e)					7
40. (*)	Leaf blade: second color					
PQ	(c)				RHS Colour Chart	
	(d)				(indicate reference number)	
	(e)					
41. (*) (+)	Leaf blade: second color: distribution					
PQ	(c)				on veins	1
	(d)				along veins	2
	(e)				on and along veins	3
					along veins and on margin	4
					between veins throughout	5
					between veins in central zone	6
					between veins in intermediate zone	7
					marginal zone	8
					throughout	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
42. (*) (+)	Leaf blade: second color: pattern					
PQ	(c)					1
	(d)					2
	(e)					3
					solid or nearly solid	4
43. (*)	Leaf blade: second color: total area					
QN	(c)					3
	(d)					5
	(e)					7
44. (*)	Leaf blade: third color					
PQ	(c)				RHS Colour Chart	
	(d)				(indicate reference number)	
	(e)					
45. (*) (+)	Leaf blade: third color: distribution					
PQ	(c)				on veins	1
	(d)				along veins	2
	(e)				on and along veins	3
					along veins and on margin	4
					between veins throughout	5
					between veins in central zone	6
					between veins in intermediate zone	7
					marginal zone	8
					throughout	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
46. (*) (+)	Leaf blade: third color: pattern					
PQ	(c)				speckled	1
	(d)				mottled	2
	(e)				random/irregular	3
					solid or nearly solid	4
47. (*)	Leaf blade: third color: total area					
QN	(c)				small	3
	(d)				medium	5
	(e)				large	7
48. (*)	Leaf blade: fourth color					
PQ	(c)				RHS Colour Chart	
	(d)				(indicate reference number)	
	(e)					
49. (*) (+)	Leaf blade: fourth color: distribution					
PQ	(c)				on veins	1
	(d)				along veins	2
	(e)				on and along veins	3
					along veins and on margin	4
					between veins throughout	5
					between veins in central zone	6
					between veins in intermediate zone	7
					marginal zone	8
					throughout	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
50. (* (+)	Leaf blade: fourth color: pattern					
PQ	(c)					1
	(d)					2
	(e)					3
					solid or nearly solid	4
51. (*	Leaf blade: fourth color: total area					
QN	(c)					3
	(d)					5
	(e)					7
52. (*	Leaf blade: color of <u>lower side</u>					
PQ	(d)				RHS Colour Chart (indicate reference number)	
53. (+)	Flowering stem: attitude					
QN					upright	Greenfinch 1
					semi-upright	Caramel 2
					spreading	Alabama Sunrise 3
54. (* (+)	Flowering stem: length					
QN	(f)				short	Strawberry Candy 3
					medium	Sparkling Burgundy 5
					long	Alabama Sunrise 7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota	
55. (*)	Flowering stem: main color						
PQ	(g)	RHS Colour Chart (indicate reference number)					
56. (*) (+)	Flowering stem: length of flowering part						
QN	short				Tapestry	3	
	medium				Peach Melba	5	
	long				Alabama Sunrise	7	
57. (*)	Flowering stem: width of flowering part						
QN	narrow				Tapestry	3	
	medium				Caramel	5	
	broad					7	
58. (*)	Flowering stem: ratio length of flowering part/width of flowering part						
QN	moderately compressed					3	
	medium					5	
	moderately elongated					7	
59. (*)	Flowering stem: density of flowers						
QN	sparse				Tapestry	3	
	medium				Caramel	5	
	dense				Strawberry Candy	7	
60. (*)	Flower bud: color						
PQ		RHS Colour Chart (indicate reference number)					

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
61. (*)	Flower: attitude					
QN	(h) upwards				Strawberry Candy	1
	outwards				Tapestry	2
	downwards				Peach Melba	3
62. (*) (+)	Flower: length					
QN	(h) short					3
	medium					5
	long					7
63. (*) (+)	Flower: width					
QN	(h) narrow					3
	medium					5
	broad					7
64. (*) (+)	Flower: color of outer surface					
PQ	(h) RHS Colour Chart (indicate reference number)					
65. (+)	<u>x Heucherella only:</u> Petal: color of inner surface					
PQ	(h) RHS Colour Chart (indicate reference number)					

8. Explanations on the Table of Characteristics

8.1 *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 second 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) To be observed on fully expanded leaves of the current season.
- (e) Where the characteristic refers to colors as "first", "second" etc., they are to be recorded in the order that they appear on the RHS chart, i.e. the first color is the one with the lowest number, the second with the second lowest and so on. For example, if the leaves are Green 137A with speckles of White 155A, Green 137A will be the first color and White 155A the second. If two colors are on the same leaf of the chart, for example Green 137A and Green 137D, 137A is regarded as the lower numbered color. It should be noted that under this system, ranking is independent of surface area, so the color covering the greatest surface area may be classified as the third or fourth color. The Guideline makes provision for four colors; if there are more, the color[s] with the smallest surface area[s] should be discounted.
- (f) To be observed on the fully extended flowering stem.
- (g) To be observed immediately below the flowering part of the flowering stem.
- (h) To be observed on fully open flowers from the middle third of the flowering part of the flowering stem.

8.2 *Explanations for individual characteristics*

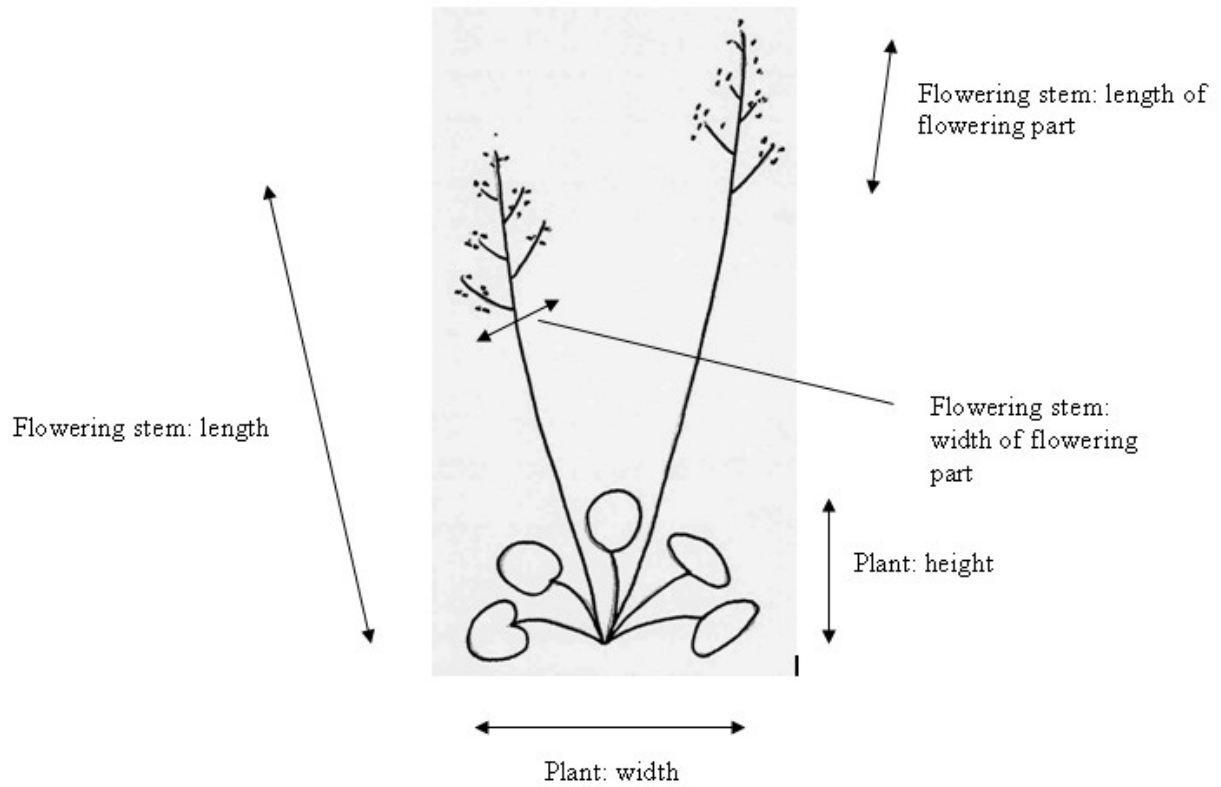
Ad. 1: Plant: height

Ad. 2: Plant: width

Ad. 54: Flowering stem: length when fully extended

Ad. 56: Flowering stem: length of flowering part

Ad. 57, 58: Flowering stem: width of flowering part



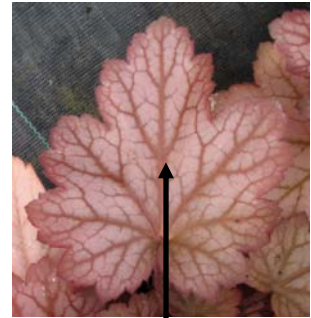
Ad. 5, 9, 13, 17, 37, 41, 45, 49: Leaf blade: color: distribution



1
on veins
(light green)



2
along veins
(blackish)



3
on and along veins
(red brown)



4
along veins and on margin
(grey purple)



5
between veins throughout
(red)



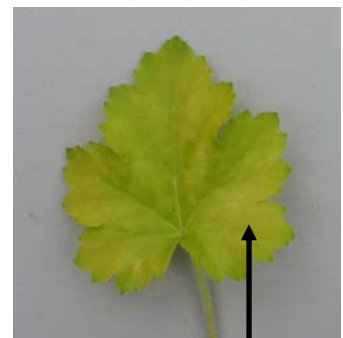
6
between veins in central zone
(grey)



7
between veins in intermediate zone
(light green)



8
marginal zone
(red)



9
throughout
(yellow green)

Ad. 6, 10, 14, 18, 38, 42, 46, 50: Leaf blade: color: pattern



1
speckled



2
mottled



3
random/irregular

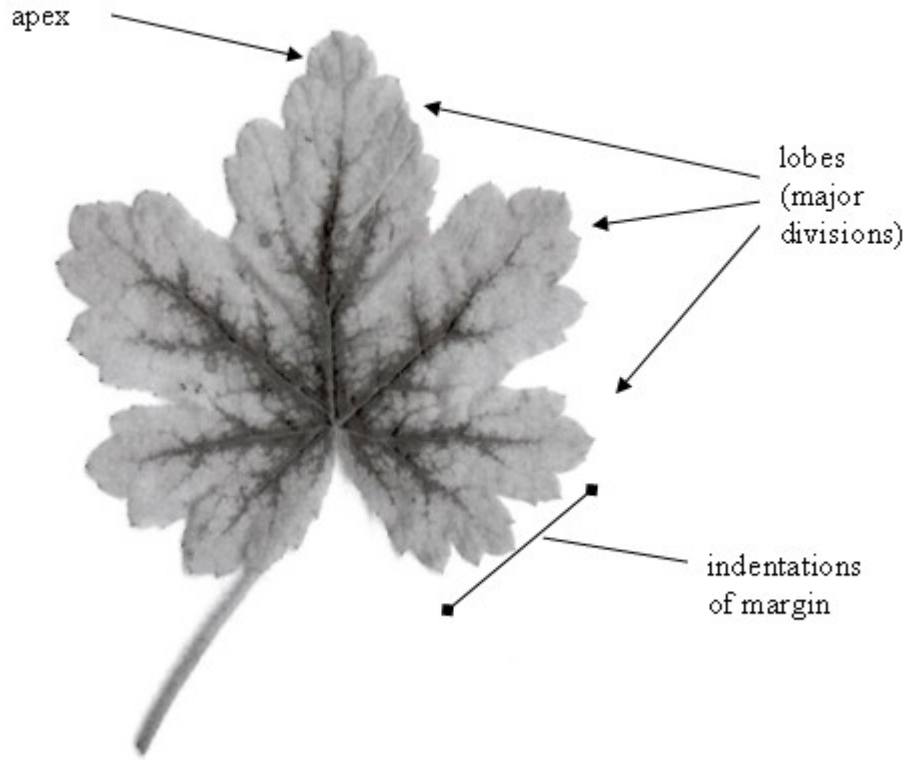


4
solid or nearly solid

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



3
shallow



5
medium



7
deep

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



3
short



5
medium



7
long

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



3
few

5
medium



7
many

Ad. 32: Leaf blade: rugosity



3
weak

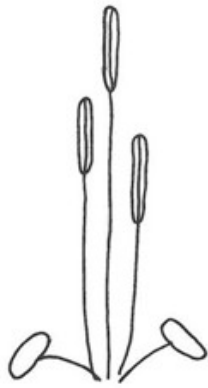


5
medium



7
strong

Ad. 53: Flowering stem: attitude



1
upright



2
semi upright



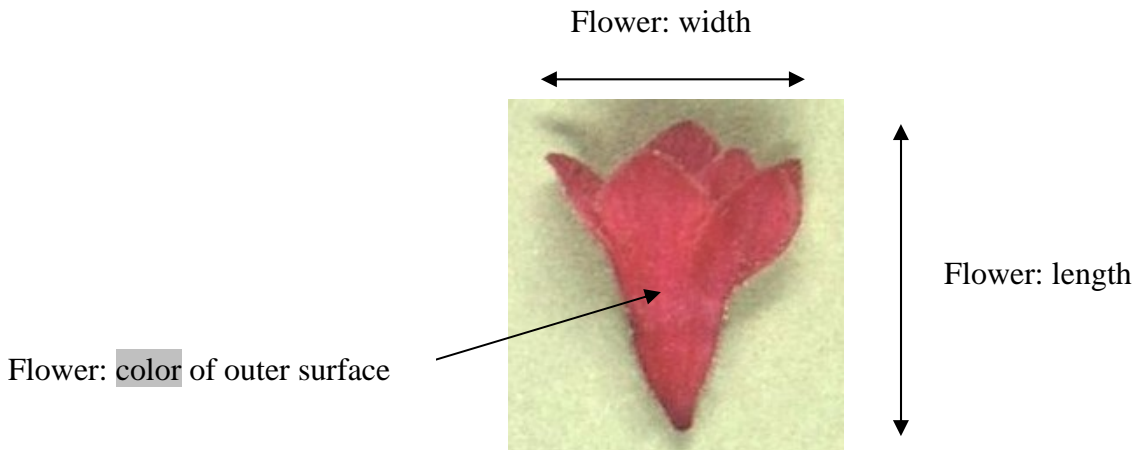
3
spreading

Ad. 62: Flower: length

Ad. 63: Flower: width

Ad. 64: Flower: color 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 *xHeucherella*.



Ad. 65: x Heucherella only: Petal: color of inner surface



← Petal: color of inner surface

9. Literature

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

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

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 (please indicate the relevant genus:)		
1.1 Botanical name	<input type="text" value="Heuchera L."/>	<input type="checkbox"/>
1.2 Common name	<input type="text" value="Heuchera"/>	
1.1 Botanical name	<input type="text" value="xHeucherella H. R. Wehrh."/>	<input type="checkbox"/>
1.2 Common name	<input type="text" value="Heucherella"/>	
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"/>	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
-------------------------	-----------------	-------------------

3. Proposed denomination and breeder's reference

Proposed denomination
(if available)

Breeder's reference

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
-------------------------	-----------------	-------------------

#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:

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 Seed

4.2.3 Other

(please provide details)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
-------------------------	-----------------	-------------------

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 Plant: height [excluding flowering stems] (1)		
very short		1[]
very short to short		2[]
short		3[]
short to medium		4[]
medium		5[]
medium to tall		6[]
tall		7[]
tall to very tall		8[]
very tall		9[]
5.2 Leaf blade: lobing (27)		
absent or very shallow		1[]
very shallow to shallow		2[]
shallow		3[]
shallow to medium		4[]
medium		5[]
medium to deep		6[]
deep		7[]
deep to very deep		8[]
very deep		9[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
-------------------------	-----------------	-------------------

Characteristics	Example Varieties	Note
5.3 Leaf margin: undulation (31)		
absent or very weak		1[]
very weak to weak		2[]
weak		3[]
weak to medium		4[]
medium		5[]
medium to strong		6[]
strong		7[]
strong to very strong		8[]
very strong		9[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
-------------------------	-----------------	-------------------

Characteristics	Example Varieties	Note
5.4 Young just expanded leaf: color covering the greatest surface area		
white		1[]
light yellow		2[]
yellow		3[]
yellow green		4[]
light green		5[]
medium green		6[]
dark green		7[]
yellow brown		8[]
pink		9[]
red		10[]
red brown		11[]
brown		12[]
purple		13[]
grey purple		14[]
grey green		15[]
grey		16[]
blackish		17[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
-------------------------	-----------------	-------------------

	Characteristics	Example Varieties	Note
5.5	Fully expanded leaf: color covering the greatest surface area		
	white		1[]
	light yellow		2[]
	yellow		3[]
	yellow green		4[]
	light green		5[]
	medium green		6[]
	dark green		7[]
	yellow brown		8[]
	pink		9[]
	red		10[]
	red brown		11[]
	brown		12[]
	purple		13[]
	grey purple		14[]
	grey green		15[]
	grey		16[]
	blackish		17[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
-------------------------	-----------------	-------------------

Characteristics	Example Varieties	Note
5.6	Fully expanded leaf: color covering the next greatest surface area	
white		1[]
light yellow		2[]
yellow		3[]
yellow green		4[]
light green		5[]
medium green		6[]
dark green		7[]
yellow brown		8[]
pink		9[]
red		10[]
red brown		11[]
brown		12[]
purple		13[]
grey purple		14[]
grey green		15[]
grey		16[]
blackish		17[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
-------------------------	-----------------	-------------------

Characteristics	Example Varieties	Note
5.7 Fully expanded leaf: color covering the next greatest surface area: distribution on veins along veins on and along veins along veins and on margin between veins throughout between veins in central zone between veins in intermediate zone marginal zone throughout		1[] 2[] 3[] 4[] 5[] 6[] 7[] 8[] 9[]
5.8 Flower: color of outer surface (64) greenish white cream light pink medium pink dark pink red		1[] 2[] 3[] 4[] 5[] 6[] 7[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
-------------------------	-----------------	-------------------

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 your candidate variety
<i>Example</i>	<i>Leaf: color of upper surface</i>	<i>yellow brown</i>	<i>light green</i>

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
-------------------------	-----------------	-------------------

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".

.....

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]