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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

HEUCHERA
HEUCHERELLAUPOV Code: HEUCH;
HEUCH_TIA*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
Technical Working Party for Ornamental Plants and Forest Trees
at its forty-second session, to be held in Angers, France, from September 14 to 18, 2009*

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.	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.]

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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 of commercial standard.

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 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.

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 *Number of Plants / Parts of Plants to be Examined*

Unless otherwise indicated, all observations should be made on 10 plants or parts taken from each of 10 plants and any other observations made on all plants in the test.

3.6 *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.

4.2 *Uniformity*

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

4.2.2. For the assessment of uniformity, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 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 tested, either by growing a further generation, or by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the previous 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) Leaf: main color (that covering the largest surface area) of the upper surface (characteristic ?), 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) Leaf: second color (that covering the second largest surface area) of the upper surface (characteristic ?), 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*

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.

6.3 *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

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

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

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

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

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

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

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

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
17.	<u>Young just expanded leaf blade:</u>					
(+)	fourth color: distribution					
PQ	(b)	on the veins				1
	(c)	along the veins				2
	(e)	on and along the veins				3
		along the veins and on the margin				4
		between the veins throughout				5
		between the veins in central zone				6
		between the veins in intermediate zone				7
		marginal zone				8
		throughout				9
18.	<u>Young just expanded leaf blade: fourth color: pattern</u>					
(+)						
PQ	(b)	speckled				1
	(c)	mottled				2
	(e)	random/irregular				3
		solid or nearly solid				4
19.	<u>Young just expanded leaf blade: fourth color: total area</u>					
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				3
		medium				5
		dense				7
22. (*)	Petiole: main color					
PQ	(d)	RHS Colour Chart (indicate reference number)				
23. (*)	Leaf blade: length					
QN	(d)	short				3
		medium				5
		long				7
24. (*)	Leaf blade: width					
QN	(d)	narrow				3
		medium				5
		broad				7
25. (*)	Leaf blade: length/width ratio					
QN	(d)	compressed				3
		medium				5
		elongated				7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26.	Leaf blade: rugosity					
QN	(c)	absent or very weak				1
	(d)	weak				3
		medium				5
		strong				7
27. (*)	Leaf blade: glossiness					
QN	(c)	absent or very weak				1
	(d)	weak				3
		medium				5
		strong				7
28.	Leaf blade: pubescence					
QN	(c)	absent or very sparse				1
	(d)	sparse				3
		medium				5
		dense				7
29. (*)	Leaf blade: pubescence of the <u>lower</u> surface					
QN	(d)	absent or very sparse				1
		sparse				3
		medium				5
		dense				7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30. (*) (+)	Leaf blade: lobing					
QN	(c)				absent or very shallow	1
	(d)				shallow	3
					medium	5
					deep	7
31.	Leaf blade: shape of apex					
PQ	(c)				acute	1
	(d)				obtuse	2
					rounded	3
32. (*) (+)	<u>x Heucherella only:</u> Leaf blade: length of terminal lobe relative to total length					
QN	(c)				short	3
	(d)				medium	5
					long	7
33.	Leaf margin: number of indentations					
QN	(c)				absent or very few	1
	(d)				few	3
					medium	5
					many	7
34. (*)	Leaf margin: depth of indentations					
QN	(c)				shallow	3
	(d)				medium	5
					deep	7

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
35. (*)	Leaf margin: undulation					
QN	(c)	absent or very weak				1
	(d)	weak				3
		medium				5
		strong				7
36. (*)	Leaf blade: first color					
PQ	(c)	RHS Colour Chart (indicate reference number)				
	(d)					
	(e)					
37. (*) (+)	Leaf blade: first color: distribution					
PQ	(c)	on the veins				1
	(d)	along the veins				2
	(e)	on and along the veins				3
		along the veins and on the margin				4
		between the veins throughout				5
		between the veins in central zone				6
		between the 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)				speckled	1
	(d)				mottled	2
	(e)				random/irregular	3
					solid or nearly solid	4
39. (*)	Leaf blade: first color: total area					
QN	(c)				small	3
	(d)				medium	5
	(e)				large	7
40. (*)	Leaf blade: second color					
PQ	(c)				RHS Colour Chart (indicate reference	
	(d)				number)	
	(e)					

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
41. (* (+)	Leaf blade: second color: distribution					
PQ	(c)				on the veins	1
	(d)				along the veins	2
	(e)				on and along the veins	3
					along the veins and on the margin	4
					between the veins throughout	5
					between the veins in central zone	6
					between the veins in intermediate zone	7
					marginal zone	8
					throughout	9
42. (* (+)	Leaf blade: second color: pattern					
PQ	(c)				speckled	1
	(d)				mottled	2
	(e)				random/irregular	3
					solid or nearly solid	4
43. (*	Leaf blade: second color: total area					
QN	(c)				small	3
	(d)				medium	5
	(e)				large	7

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
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 (indicate reference number)				
	(d)					
	(e)					
49. (*) (+)	Leaf blade: fourth color: distribution					
PQ	(c)	on the veins				1
	(d)	along the veins				2
	(e)	on and along the veins				3
		along the veins and on the margin				4
		between the veins throughout				5
		between the veins in central zone				6
		between the 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)				speckled	1
	(d)				mottled	2
	(e)				random/irregular	3
					solid or nearly solid	4
51. (*	Leaf blade: fourth color: total area					
QN	(c)				small	3
	(d)				medium	5
	(e)				large	7
52. (*	Leaf blade: color of <u>lower side</u>					
PQ	(d)				RHS Colour Chart (indicate reference number)	
53.	Flowering stem: strength					
QN					weak	3
					medium	5
					strong	7
54. (* (+)	Flowering stem: length when fully extended					
QN					short	3
					medium	5
					long	7
55. (*	Flowering stem: main color					
PQ	(f)				RHS Colour Chart (indicate reference number)	

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
56. (* (+)	Flowering stem: length of flowering part					
QN	short					3
	medium					5
	long					7
57. (*	Flowering stem: width of flowering part at widest point					
QN	narrow					3
	medium					5
	broad					7
58. (*	Flowering stem: ratio length of flowering part/width of flowering part at widest point					
QN	compressed					3
	medium					5
	elongated					7
59. (*	Flowering stem: density of flowers					
QN	sparse					3
	medium					5
	dense					7
60. (*	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	(g)					3
					moderately upwards	
					outwards	5
					moderately downwards	7
62. (*) (+)	Flower: length					
QN	(g)					3
					short	
					medium	5
					long	7
63. (*) (+)	Flower: width					
QN	(g)					3
					narrow	
					medium	5
					broad	7
64. (*) (+)	Flower: color of outer surface					
PQ	(g)					
					RHS Colour Chart (indicate reference number)	
65. (+)	<u>x Heucherella only:</u> Petal: color of inner surface					
PQ	(g)					
					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. It should be noted that under this system, the color covering the greatest surface area may be classified as the third or fourth color.
- (f) To be observed immediately below the flowering part of the flowering stem.
- (g) To be observed on fully open flowers from the middle third of the flowering part of the flowering stem.

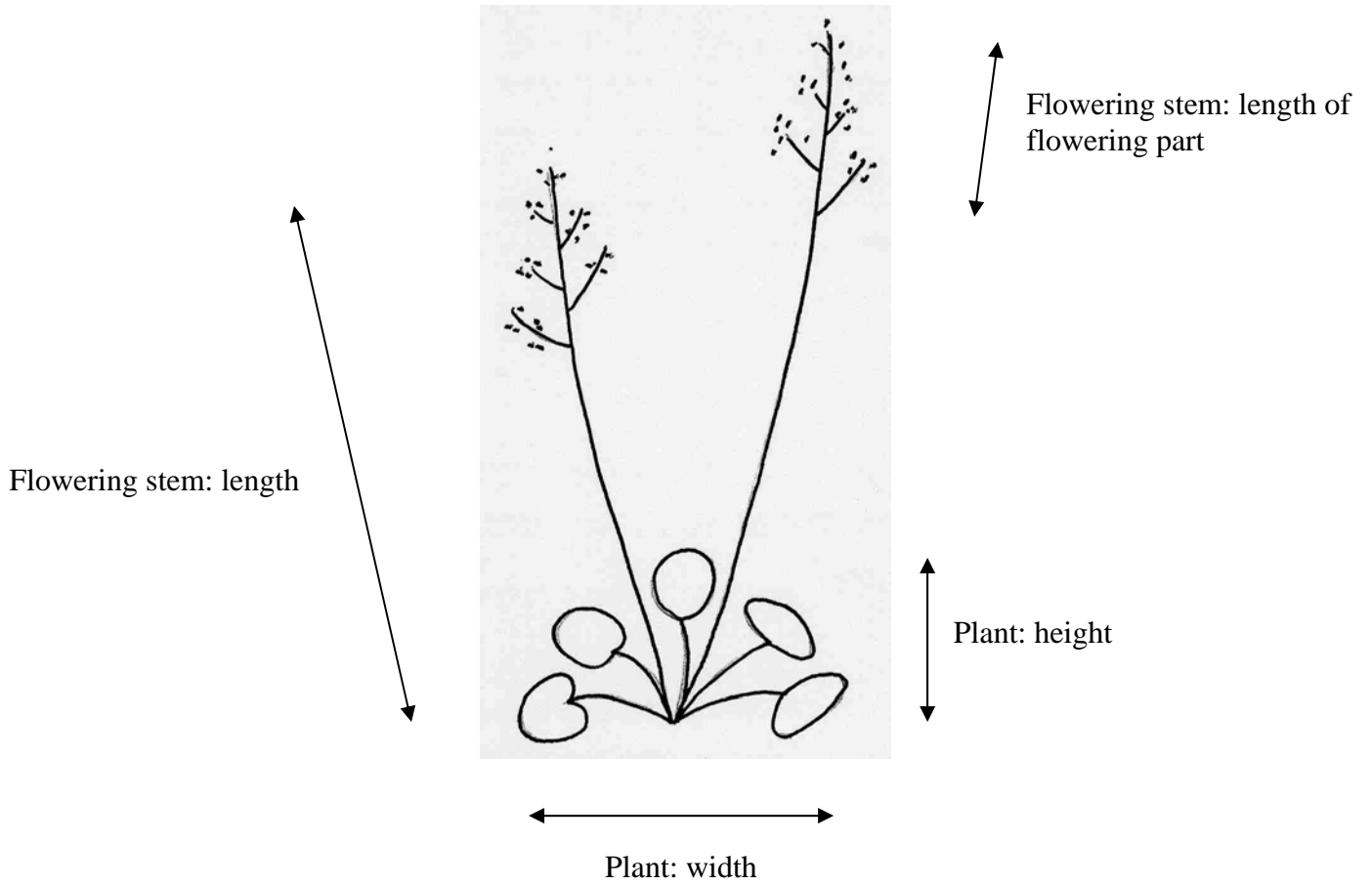
8.2 *Explanations for individual characteristics*

Ad. 1: Plant: height

Ad. 2: Plant: width

Ad. 54: Flowering stem: length when fully extended

Ad. 56: Flowering stem: length of flowering part



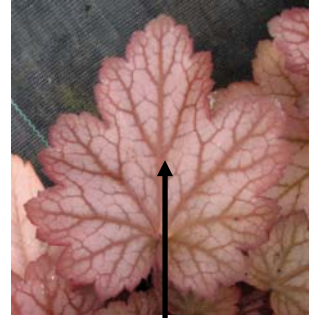
Ad. 5, 9, 13, 17, 37, 41, 45, 49: Leaf blade: color: distribution



1
on the veins
(light green)



2
along the veins
(blackish)



3
on and along the veins
(red brown)



4
along the veins and on
the margin
(grey purple)



5
between the veins
throughout
(red)



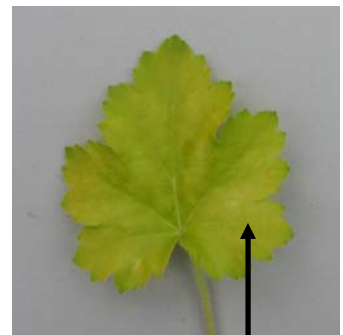
6
between the veins in
central zone
(grey)



7
between the 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. 30: Leaf blade: lobing



3
shallow



5
medium



7
deep

Ad. 32: x Heucherella only: Leaf blade: length of terminal lobe relative to total length



3
short



5
medium



7
long

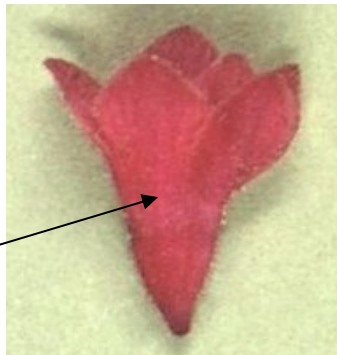
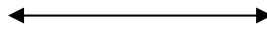
Ad. 62: Flower: length

Ad. 63: Flower: width

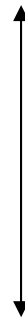
Ad. 64: Flower: color of outer surface

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*.

Flower: width



Flower: length



Flower: colour of outer surface



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="text" value=""/>
1.2 Common name	<input type="text" value="Heuchera"/>	
1.1 Botanical name	<input type="text" value="xHeucherella H. R. Wehrh."/>	<input type="text" value=""/>
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"/>	
3. Proposed denomination and breeder's reference		
Proposed denomination (if available)	<input type="text"/>	
Breeder's reference	<input type="text"/>	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#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)
- (b) partially known cross []
(please state known parent variety(ies))
- (c) unknown cross []

4.1.2 Mutation []
(please state parent variety)

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

4.1.4 Other []
(please provide details)

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

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

4.2.1 Vegetative propagation

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

4.2.2 Seed

- (a) Self-pollination
- (b) Cross-pollination
 - (i) population
 - (ii) synthetic variety
- (c) Hybrid
(please provide details)
- (d) Other
(please provide details)

4.2.3 Other (please provide details)

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

Characteristics	Example Varieties	Note
5.1 Plant: height [excluding flowering stems] (1)		
short		3[]
medium		5[]
tall		7[]
5.2 Leaf blade: lobing (30)		
absent or very shallow		1[]
shallow		3[]
medium		5[]
deep		7[]
5.3 Leaf margin: undulation (35)		
absent or very weak		1[]
weak		3[]
medium		5[]
strong		7[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
5.4 Young just expanded leaf: main color (the 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:
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Characteristics	Example Varieties	Note
5.5 Leaf blade: main color (the 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:
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Characteristics	Example Varieties	Note
5.6 Leaf blade: secondary color (the 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:
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Characteristics	Example Varieties	Note
5.7 Leaf blade: secondary color (the color covering the next greatest surface area): distribution		
on the veins		1[]
along the veins		2[]
on and along the veins		3[]
along the veins and on the margin		4[]
between the veins throughout		5[]
between the veins in central zone		6[]
between the veins in intermediate zone		7[]
marginal zone		8[]
throughout		9[]
5.8 Flower: color of outer surface (64)		
greenish		1[]
white		2[]
cream		3[]
light pink		4[]
medium pink		5[]
dark pink		6[]
red		7[]

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

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

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for 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:
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#7. Additional information which may help in the examination of the variety

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

Yes [] No []

(If yes, please provide details)

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

Yes [] No []

(If yes, please provide details)

7.3 Other information

A representative color photograph of the variety should accompany the Technical Questionnaire.

8. Authorization for release

(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?

Yes [] No []

(b) Has such authorization been obtained?

Yes [] No []

If the answer to (b) is yes, please attach a copy of the authorization.

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

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