



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

***Hosta Tratt.***

**HOSTA**

UPOV Code: HOSTA

**Adopted on 11/03/2015**

**Entry into force on 11/03/2015**

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## **1. SUBJECT OF THE PROTOCOL AND REPORTING**

### **1.1 Scope of the technical protocol**

This Technical Protocol applies to all varieties of *Hosta Tratt*.

The protocol describes the technical procedures to be followed in order to meet the requirements of Council Regulation 2100/94 on Community Plant Variety Rights. The technical procedures have been agreed by the Administrative Council and are based on documents agreed by the International Union for the Protection of New Varieties of Plants (UPOV), such as the General Introduction to DUS (UPOV Document TG/1/3 [http://www.upov.int/en/publications/intro\\_dus.htm](http://www.upov.int/en/publications/intro_dus.htm)), its associated TGP documents (<http://www.upov.int/en/publications/tgp/>) and the relevant UPOV Test Guideline TG/299/1 dated 09/04/2014 (<http://www.upov.int/edocs/tgdocs/en/tg299.pdf>) for the conduct of tests for Distinctness, Uniformity and Stability.

### **1.2 Entry into Force**

The present protocol enters into force on **11.03.2015**. Any on-going DUS examination of candidate varieties started before the aforesaid date will not be affected by the approval of the Technical Protocol. Technical examinations of candidate varieties are carried out according to the TP in force when the DUS test starts. The starting date of a DUS examination is considered to be the due date for submitting of plant material for the first test period.

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

### **1.3 Reporting between Examination Office and CPVO and Liaison with Applicant**

#### **1.3.1 Reporting between Examination Office and CPVO**

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

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

The final report shall state the opinion of the Examination Office on the distinctness, uniformity and stability of the variety. Where it considers those criteria to be satisfied, or where the CPVO so requests, a description of the variety shall be added to the report. If a report is negative the Examination Office shall set out the detailed reasons for its findings.

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

#### **1.3.2 Informing on problems in the DUS test**

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

#### **1.3.3 Sample keeping in case of problems**

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

## **2. MATERIAL REQUIRED**

### **2.1 Plant material requirements**

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

## **2.2 Informing the applicant of plant material requirements**

The CPVO informs the applicant that

- he is responsible for ensuring compliance with any customs and plant health requirements.
- the plant material supplied should be visibly healthy, not lacking in vigour, nor affected by any important pest or disease.
- the plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

## **2.3 Informing about problems on the submission of material**

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

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

## **3. METHOD OF EXAMINATION**

### **3.1 Number of growing cycles**

The minimum duration of tests should normally be two independent growing cycles.

### **3.2 Testing Place**

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

[http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp\\_9\\_1.pdf](http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp_9_1.pdf).

### **3.3 Conditions for Conducting the Examination**

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

Because daylight varies, colour determinations made against a colour chart should be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room without direct sunlight. The spectral distribution of the illuminant for artificial daylight should conform with the CIE Standard of Preferred Daylight D 6500 and should fall within the tolerances set out in the British Standard 950, Part I. These determinations should be made with the plant part placed against a white background. The colour chart and version used should be specified in the variety description.

### **3.4 Test design**

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

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

### **3.5 Additional tests**

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, an additional test may be undertaken providing that a technically acceptable test procedure can be devised.

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

### **3.6 Constitution and maintenance of a variety collection**

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

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

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

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

#### 3.6.1 Forms of variety collection

The variety collection shall comprise variety descriptions and may comprise living plant material. The variety description shall be produced by the examination office unless special cooperation exists between examination offices and the CPVO. The descriptive and pictorial information produced by the examination office shall be held and maintained in a form of a database.

#### 3.6.2 Living Plant Material

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

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

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

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

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

### **4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY**

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

#### **4.1 Distinctness**

##### 4.1.1 General recommendations

It is of particular importance for users of this Technical Protocol to consult the UPOV-General Introduction to DUS (link in chapter 1 of this document) and TGP 9 'Examining Distinctness' ([http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp\\_9\\_1.pdf](http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp_9_1.pdf)) prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in this Technical Protocol.

##### 4.1.2. Consistent differences

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

##### 4.1.3 Clear differences

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

##### 4.1.4 Number of plants/parts of plants to be examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 10 plants or parts taken from each of 10 plants and any other observations made on all plants in the test, disregarding any off-type plants.

#### 4.1.5 Method of observation

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

MG:	single measurement of a group of plants or parts of plants
MS:	measurement of a number of individual plants or parts of plants
VG:	visual assessment by a single observation of a group of plants or parts of plants
VS:	visual assessment by observation of individual plants or parts of plants

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

"Visual" observation (V) is an observation made on the basis of the expert's judgment. For the purposes of this document, "visual" observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. colour 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

It is of particular importance for users of this Technical Protocol to consult the UPOV-General Introduction to DUS (link in chapter 1 of this document) and TGP 10 'Examining Uniformity' ([http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp\\_10\\_1.pdf](http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp_10_1.pdf)) prior to making decisions regarding uniformity. However, the following point is provided for elaboration or emphasis in this Technical Protocol.

### **Uniformity assessment by off-types**

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

## 4.3 Stability

4.3.1 It is of particular importance for users of this Technical Protocol to consult the UPOV-General Introduction to DUS (link in chapter 1 of this document) and TGP 11 'Examining Stability' ([http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp\\_11\\_1.pdf](http://www.upov.int/export/sites/upov/en/publications/tgp/documents/tgp_11_1.pdf))

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

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

## 5. GROUPING OF VARIETIES AND 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 blade: shape (characteristic 11)
- b) Leaf blade: colour covering the largest surface area, with the following groups:
  - white
  - light yellow
  - medium yellow
  - dark yellow
  - light green
  - medium green
  - dark green
  - blue green
- c) Leaf blade: colour covering the second largest surface area, with the following groups:
  - white
  - light yellow
  - medium yellow
  - dark yellow
  - light green
  - medium green
  - dark green
  - blue green

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

## **6. INTRODUCTION TO THE TABLE OF CHARACTERISTICS**

### **6.1 Characteristics to be used**

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

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

#### **States of expression and corresponding notes**

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

State	Note
small	3
medium	5
large	7

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

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

## 6.2 Example Varieties

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

## 6.3 Legend

For the CPVO N° column:

G	Grouping characteristic	– see Chapter 5
MG, MS, VG, VS		– see Chapter 4.1.5
QL	Qualitative characteristic	
QN	Quantitative characteristic	
PQ	Pseudo-qualitative characteristic	

For the UPOV N° column:

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

(*)	UPOV Asterisked characteristic – Characteristics that are important for the international harmonization of variety descriptions.
(a)-(e)	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**

<b>CPVO N°</b>	<b>UPOV N°</b>	<b>Stage, Method</b>	<b>Characteristics</b>	<b>Examples</b>	<b>Note</b>
<b>1.</b>	<b>1. (*)</b>	<b>VG</b>	<b>Plant: colour of first scaly leaves</b>		
(+)		(a)	green	Sagae	1
<b>PQ</b>			purple	El Capitan	2
			brown	Fenmans Fascination	3
<b>2.</b>	<b>2. (*)</b>	<b>VG/MG/MS</b>	<b>Plant: height of foliage</b>		
<b>QN</b>		(a)	short	Great Escape	3
			medium	Paradise Island	5
			tall	Fragrant Queen	7
<b>3.</b>	<b>3.</b>	<b>VG/MG/MS</b>	<b>Plant: width</b>		
<b>QN</b>		(a)	very narrow	Desert Mouse, Pandora's Box	1
			narrow	Secret Ambition	3
			medium	Paradise Island	5
			broad		7
			very broad	Big Boy	9
<b>4.</b>	<b>4. (*)</b>	<b>VG/MG/MS</b>	<b>Petiole: length</b>		
<b>QN</b>		(a)	very short	Desert Mouse	1
			short	Time Tunnel	3
			medium	Earth Angel	5
			long	Blue Circle	7
			very long	Big Boy, Flower Power, Green Acres	9
<b>5.</b>	<b>5. (*)</b>	<b>VG</b>	<b>Petiole: shape of inner side in cross section</b>		
(+)		(a)	flat		1
<b>PQ</b>			V-shape		2
			U-shape		3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>6.</b> <b>PQ</b>	<b>6.</b>	<b>VG</b> <b>(a)</b>	<b>Petiole: colour</b>		
			yellow	White Christmas	1
			yellow green	Desert Mouse	2
			light green	Fragrant Queen	3
			medium green	Stirfry	4
			dark green	Devon Green	5
			blue green	Bressingham Blue	6
bleu grey	Grand Marquee	7			
<b>7.</b> <b>PQ</b>	<b>7.</b>	<b>VG</b> <b>(a)</b>	<b>Petiole: pattern of anthocyanin coloration</b>		
			absent	Desert Mouse	1
			flush	Pilgrim	2
			spotted	Paradise Island	3
<b>8.</b> <b>QN</b>	<b>8.</b> <b>(*)</b>	<b>VG/MG/MS</b> <b>(a)</b>	<b>Leaf blade: length</b>		
			very short	Desert Mouse	1
			short	Little Treasure, Secret Ambition	3
			medium	Heat Wave	5
			long	Blue Circle	7
very long	Big Boy	9			
<b>9.</b> <b>QN</b>	<b>9.</b> <b>(*)</b>	<b>VG/MG/MS</b> <b>(a)</b>	<b>Leaf blade: width</b>		
			very narrow	Desert Mouse	1
			narrow	Secret Ambition	3
			medium	Risky Business	5
			broad		7
very broad	Big Boy, Sum and Substance	9			

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>10.</b> (+) <b>QN</b>	<b>10.</b>	<b>VG</b>  <b>(a)</b>	<b>Leaf blade: position of broadest part</b>		
			at middle		1
			slightly towards base		2
			moderately towards base		3
			strongly towards base		4
<b>11.</b> (+) <b>PQ</b>  <b>G</b>	<b>11.</b> (* )	<b>VG</b>  <b>(a)</b>	<b>Leaf blade: shape</b>		
			broad ovate	Sum and Substance	1
			medium ovate	Desert Mouse, Sagae	2
			narrow ovate		3
			very narrow ovate	Stiletto	4
			transverse elliptic		5
			circular	Abiqua Drinking Gourd	6
			medium elliptic	Pineapple Poll	7
			narrow elliptic	Saishu Jima	8
very narrow elliptic		9			
<b>12.</b> (+) <b>PQ</b>	<b>12.</b> (* )	<b>VG</b>  <b>(a)</b>	<b>Leaf blade: shape of base</b>		
			acute	Saishu Jima, Sea Octopus	1
			obtuse	Hoosier Harmony	2
			truncate		3
			cordate	Minnie Klopping, Pacific Blue Edger	4
<b>13.</b> (+) <b>PQ</b>	<b>13.</b> (* )	<b>VG</b>  <b>(a)</b>	<b>Leaf blade: shape of apex (excluding tip)</b>		
			acute	Otome-no-ka	1
			obtuse	Oriana	2
			rounded	Aureonebulosa, Great Expectations, Tokudama	3
<b>14.</b> (+) <b>PQ</b>	<b>14.</b> (* )	<b>VG</b>  <b>(a)</b> <b>(b)</b>	<b>Leaf blade: colour 1</b>		
			RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>15.</b>	<b>15.</b> (*)	<b>VG</b>	<b>Leaf blade: colour 1: distribution</b>		
(+)		(a)	at basal zone		1
<b>PQ</b>			at centre		2
			at top		3
			at marginal zone		4
			irregular		5
			throughout		6
<b>16.</b>	<b>16.</b>	<b>VG</b>	<b>Leaf blade: colour 1: pattern</b>		
(+)		(a)	flamed		1
<b>PQ</b>			striped		2
			spotted		3
			in sectors		4
			marbled		5
			marginated		6
			solid or nearly solid		7
<b>17.</b>	<b>17.</b> (*)	<b>VG</b>	<b>Leaf blade: colour 1: total area</b>		
(+)		(a)	small		3
<b>QN</b>			medium		5
			large		7
<b>18.</b> (+)	<b>18.</b> (*)	<b>VG</b>	<b>Leaf blade: colour 2 (if present)</b>		
<b>PQ</b>		(a) (b)	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>19.</b>	<b>19.</b> (* )	<b>VG</b>	<b>Leaf blade: colour 2: distribution</b>		
(+)		(a)	none		1
<b>PQ</b>			at basal zone		2
			at centre		3
			at top		4
			at marginal zone		5
			irregular		6
			throughout		7
<b>20.</b>	<b>20.</b>	<b>VG</b>	<b>Leaf blade: colour 2: pattern</b>		
(+)		(a)	flamed		1
<b>PQ</b>			striped		2
			spotted		3
			in sectors		4
			marbled		5
			marginated		6
			solid or nearly solid		7
<b>21.</b>	<b>21.</b> (* )	<b>VG</b>	<b>Leaf blade: colour 2: total area</b>		
(+)		(a)	small		3
<b>QN</b>			medium		5
			large		7
<b>22.</b> (+)	<b>22.</b> (* )	<b>VG</b>	<b>Leaf blade: colour 3 (if present)</b>		
<b>PQ</b>		(a) (b)	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>23.</b>	<b>23.</b> <b>(*)</b>	<b>VG</b>	<b>Leaf blade: colour 3: distribution</b>		
<b>(+)</b>		<b>(a)</b>	none		1
<b>PQ</b>			at basal zone		2
			at centre		3
			at top		4
			at marginal zone		5
			irregular		6
			throughout		7
<b>24.</b>	<b>24.</b>	<b>VG</b>	<b>Leaf blade: colour 3: pattern</b>		
<b>(+)</b>		<b>(a)</b>	flamed		1
<b>PQ</b>			striped		2
			spotted		3
			in sectors		4
			marbled		5
			marginated		6
			solid or nearly solid		7
<b>25.</b>	<b>25.</b> <b>(*)</b>	<b>VG</b>	<b>Leaf blade: colour 3: total area</b>		
<b>(+)</b>		<b>(a)</b>	small		3
<b>QN</b>			medium		5
			large		7
<b>26.</b> <b>(+)</b>	<b>26.</b> <b>(*)</b>	<b>VG</b>	<b>Leaf blade: colour 4 (if present)</b>		
<b>PQ</b>		<b>(a)</b> <b>(b)</b>	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>27.</b>	<b>27.</b> (* )	<b>VG</b>	<b>Leaf blade: colour 4: distribution</b>		
(+)		(a)	none		1
<b>PQ</b>			at basal zone		2
			at centre		3
			at top		4
			at marginal zone		5
			irregular		6
			throughout		7
<b>28.</b>	<b>28.</b>	<b>VG</b>	<b>Leaf blade: colour 4: pattern</b>		
(+)		(a)	flamed		1
<b>PQ</b>			striped		2
			spotted		3
			in sectors		4
			marbled		5
			marginated		6
			solid or nearly solid		7
<b>29.</b>	<b>29.</b> (* )	<b>VG</b>	<b>Leaf blade: colour 4: total area</b>		
(+)		(a)	small		3
<b>QN</b>			medium		5
			large		7
<b>30.</b> (+)	<b>30.</b> (* )	<b>VG</b>	<b>Leaf blade: colour 5 (if present)</b>		
<b>PQ</b>		(a) (b)	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>31.</b>	<b>31. (*)</b>	<b>VG</b>	<b>Leaf blade: colour 5: distribution</b>		
(+)		(a)	none		1
<b>PQ</b>			at basal zone		2
			at centre		3
			at top		4
			at marginal zone		5
			irregular		6
			throughout		7
<b>32.</b>	<b>32.</b>	<b>VG</b>	<b>Leaf blade: colour 5: pattern</b>		
(+)		(a)	flamed		1
<b>PQ</b>			striped		2
			spotted		3
			in sectors		4
			marbled		5
			marginated		6
			solid or nearly solid		7
<b>33.</b>	<b>3. (*)</b>	<b>VG</b>	<b>Leaf blade: colour 5: total area</b>		
(+)		(a)	small		3
<b>QN</b>			medium		5
			large		7
<b>34.</b>	<b>34.</b>	<b>VG</b>	<b>Leaf blade: profile in cross section</b>		
<b>QN</b>		(a)	convex	Big Daddy	1
			flat	Aphrodite, White Feather	2
			moderately concave	Desert Mouse	3
			strongly concave	Love Pat	4



CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>35.</b>	<b>35.</b> (* )	<b>VG</b>	<b>Leaf blade: number of parallel veins</b>		
(+)		(a)	few	Fragrant Queen	1
<b>QN</b>			medium	Frosted Mouse, Heat Wave	2
			many	Blue Circle	3
<b>36.</b>	<b>36.</b>	<b>VG</b>	<b>Leaf blade: degree of bulging</b>		
(+)		(a)	absent or very weak	Peter Pan	1
<b>QN</b>			weak	Hyacinthina	2
			medium	Blue Circle	3
			strong	Ground Master	4
			very strong	Pizzazz	5
<b>37.</b>	<b>37.</b>	<b>VG</b>	<b>Leaf blade: blistering</b>		
(+)		(a)	absent or weak	Fragrant Queen	1
<b>QN</b>			medium	Sea Dream	2
			strong	Midas Touch	3
<b>38.</b>	<b>38.</b>	<b>VG</b>	<b>Leaf blade: undulation of margin</b>		
<b>QN</b>		(a)	absent or weak	Silvery Slugproof	1
			medium	American Sweetheart	2
			strong	Sparky	3
<b>39.</b>	<b>39.</b>	<b>VG</b>	<b>Leaf blade: twisting</b>		
(+)		(a)	absent or weak	Devon Green, Earth Angel	1
<b>QN</b>			moderate	Blue Angel, Pizzazz	2
			strong	Green Power, White Christmas	3
<b>40.</b>	<b>40.</b> (* )	<b>VG/MS</b>	<b>Inflorescence: length</b>		
(+)		(c)	short	Great Escape	3
<b>QN</b>			medium	Secret Ambition	5
			long	Fragrant Queen	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
41.  QN	41. (* )	VG/MG  (c)	<b>Inflorescence: number of flowers</b>  few	Paradise Island	3
				Secret Ambition	5
				Moonstruck	7
42.  QN	42.	VG  (c)	<b>Inflorescence: attitude of flowers</b>  erect		1
				Diamond Tiara	2
				Halcyon, George Smith	3
43.  PQ	43.	VG  (c)	<b>Peduncle: colour</b>  RHS Colour Chart (indicate reference number)		
44.  QL	44. (* )	VG  (c)  (e)	<b>Inflorescence: presence of bracts</b>  absent  present		1
				Moonstruck	9
45.  QN	45.	VG/MS  (c)  (e)	<b>Bract: length</b>  short  medium  long	Paradise Island	3
				Grand Marquee	5
				Secret Ambition	7
46.  QN	46.	VG/MS  (c)  (e)	<b>Bract: width</b>  narrow  medium  broad	American Sweetheart	3
				Risky Business	5
				Earth Angel	7
47.  QN	47.	VG  (c)  (e)	<b>Bract: shape in cross section</b>  concave  flat  convex	Desert Mouse	1
					2
					3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>48.</b>	<b>48.</b> (*)	<b>VG</b>	<b>Bract: colour of outer side</b>		
<b>PQ</b>		<b>(c)</b> <b>(e)</b>	RHS Colour Chart (indicate reference number)		
<b>49.</b>	<b>49.</b>	<b>VG/MG</b>	<b>Pedicle: length</b>		
<b>(+)</b>		<b>(e)</b>	short	Desert Mouse	3
<b>QN</b>			medium	Grand Marquee	5
			long	Earth Angel	7
<b>50.</b>	<b>50.</b>	<b>VG</b>	<b>Pedicle: colour</b>		
<b>PQ</b>		<b>(c)</b>	RHS Colour Chart (indicate reference number)		
<b>51.</b>	<b>51.</b> (*)	<b>VG</b>	<b>Flower: type</b>		
<b>(+)</b>		<b>(c)</b>	simple	Halcyon, Tropical Dancer	1
<b>QN</b>			semi-double		2
			double		3
<b>52.</b>	<b>52.</b>	<b>VG/MG/MS</b>	<b>Perianth: length</b>		
<b>(+)</b>		<b>(c)</b>	short	Desert Mouse	3
<b>QN</b>			medium	Secret Ambition	5
			long	Atlantis	7
<b>53.</b>	<b>53.</b>	<b>VG/MG/MS</b>	<b>Perianth: width</b>		
<b>(+)</b>		<b>(c)</b>	narrow	Paradise Island	3
<b>QN</b>			medium	Secret Ambition	5
			broad		7
<b>54.</b>	<b>54.</b>	<b>VG</b>	<b>Perianth: shape in lateral view</b>		
<b>(+)</b>		<b>(c)</b>	tubular		1
<b>PQ</b>			flared		2
			funnel		3
			campanulate		4

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>55.</b>	<b>55.</b>	<b>VG/MG/MS</b>	<b>Corolla tube: length</b>		
(+)		(c)	short		3
<b>QN</b>			medium	Great Escape	5
			long	American Sweetheart	7
<b>56.</b>	<b>56. (*)</b>	<b>VG</b>	<b>Corolla tube: colour of outer side</b>		
<b>PQ</b>		(c)	RHS Colour Chart (indicate reference number)		
<b>57.</b>	<b>57.</b>	<b>VG/MG/MS</b>	<b>Corolla: length of <u>outer</u> lobes</b>		
(+)		(c)	short	Earth Angel	3
<b>QN</b>			medium	Risky Business	5
			long	American Sweetheart	7
<b>58.</b>	<b>58.</b>	<b>VG</b>	<b>Corolla: shape of <u>outer</u> lobes</b>		
(+)		(c)	broad ovate		1
<b>PQ</b>			medium ovate	Desert Mouse, Lucky Mouse	2
			narrow ovate		3
			very narrow ovate		4
			broad elliptic		5
			circular		6
			medium elliptic	Atlantis	7
			narrow elliptic		8
<b>59.</b>	<b>59. (*)</b>	<b>VG</b>	<b>Corolla: colour on outer side of <u>outer</u> lobes</b>		
<b>PQ</b>		(c)	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>60.</b>	<b>60.</b> (*)	<b>VG</b>	<b>Corolla: shape of apex of <u>outer</u> lobes</b>		
<b>PQ</b>		<b>(c)</b>	acute	Atlantis, Fragrant Queen	1
			obtuse		2
			rounded		3
<b>61.</b>	<b>61.</b>	<b>VG/MG/MS</b>	<b>Corolla: length of <u>inner</u> lobes</b>		
<b>(+)</b>		<b>(c)</b>	short	Secret Ambition	3
<b>QN</b>			medium	Risky Business	5
			long		7
<b>62.</b>	<b>62.</b>	<b>VG</b>	<b>Corolla: shape of <u>inner</u> lobes</b>		
<b>(+)</b>		<b>(c)</b>	broad ovate		1
<b>PQ</b>			medium ovate	Atlantis, Lucky Mouse	2
			narrow ovate		3
			very narrow ovate		4
			broad elliptic		5
			circular	Risky Business	6
			medium elliptic		7
			narrow elliptic		8
<b>63.</b> <b>(+)</b>	<b>63.</b>	<b>VG</b>	<b>Corolla: colour of outer side of <u>inner</u> lobes</b>		
<b>PQ</b>		<b>(c)</b>	RHS Colour Chart (indicate reference number)		
<b>64.</b>	<b>64.</b>	<b>VG</b>	<b>Corolla: shape of apex of <u>inner</u> lobes</b>		
<b>PQ</b>		<b>(c)</b>	acute		1
			obtuse		2
			rounded	Atlantis, Desert Mouse	3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>65.</b>	<b>65.</b>	<b>VG/MG/MS</b>	<b>Filament: length</b>		
<b>QN</b>		<b>(c)</b>	short	Heat Wave	3
			medium	Earth Angel	5
			long	American Sweetheart	7
<b>66.</b>	<b>66.</b>	<b>VG</b>	<b>Filament: colour</b>		
<b>PQ</b>		<b>(c)</b>	white or whitish	Atlantis	1
			light green	Roxsanne, Tattoo	2
			medium green		3
<b>67.</b>	<b>67. (*)</b>	<b>VG</b>	<b>Anther: colour</b>		
<b>PQ</b>		<b>(c)</b>	yellow	Tattoo	1
			yellow with purple	Golden Meadows	2
			yellow brown	Desert Mouse	3
			purple	Atlantis, Secret Love	4
			brown purple	Paradise Island, Risky Business	5
<b>68.</b>	<b>68.</b>	<b>VG</b>	<b>Pollen: colour</b>		
<b>PQ</b>		<b>(c)</b>	medium yellow	Fragrant Queen, Secret Ambition	1
			dark yellow	Roxsanne	2
			yellow orange	Earth Angel, Heat Wave	3
			orange	Atlantis, Desert Mouse	4
<b>69.</b>	<b>69.</b>	<b>VG/MG/MS</b>	<b>Style: length</b>		
<b>QN</b>		<b>(c)</b>	short	Desert Mouse	3
			medium	Secret Ambition	5
			long	American Sweetheart	7
<b>70.</b>	<b>70.</b>	<b>VG</b>	<b>Style: colour</b>		
<b>PQ</b>		<b>(c)</b>	white or whitish	Atlantis	1
			light green	Golden Meadows, Paradise Joyce	2
			medium green	Paradise Power	3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
<b>71.</b>	<b>71.</b>	<b>VG</b>	<b>Style: colour of stigma</b>		
<b>PQ</b>		<b>(c)</b>	white or whitish	Atlantis, Desert Mouse	1
			light green	Last Dance, Liberty Hosta	2
			medium green	Roxsanne	3
			light yellow		4
			light purple	Liberty Hosta	5
			light violet blue	WAR 101	6

## 8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS

### 8.1 Explanations covering several characteristics

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

- a. Plant, petiole and leaf characteristics should be observed before flowering.
- b. 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 five colours; if there are more, the colour[s] with the smallest surface area[s] should be discounted.
- c. Characteristics of the inflorescence should be observed when first flowers are open.
- d. Length of peduncle should be observed when all flowers are open.
- e. Characteristics of the bract should be observed on the bract of the first flower in the inflorescence.

A photograph of the leaf could be provided in conjunction with the description in order to clarify the colour distribution and/or pattern. However, a warning should be added to this photograph, explaining that the primary intent of the photograph is to show the distribution and/or pattern of the colours on the plant part rather than the actual colours. Colour on photographs can be affected by the technology of the camera and the facilities used to display the photograph (printer, overhead projector, etc.).

### 8.2 Explanations for individual characteristics

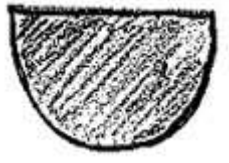
#### Ad. 1: Plant: colour of first scaly leaves

The characteristic should be observed when the first shoots emerge and before opening of the leaves.





Ad. 5: Petiole: shape of inner side in cross section



1  
flat

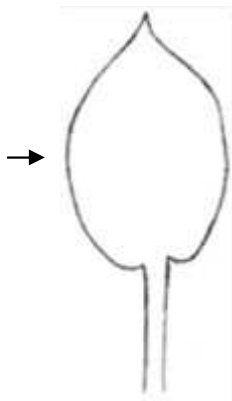


2  
V-shape

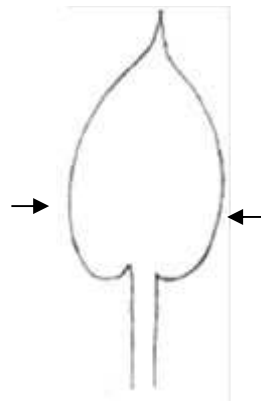


3  
U-shape

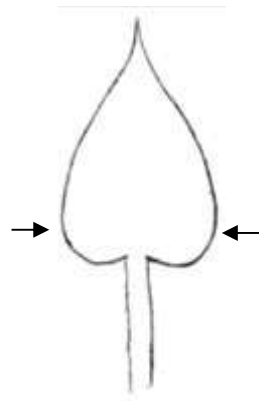
Ad. 10: Leaf blade: position of broadest part



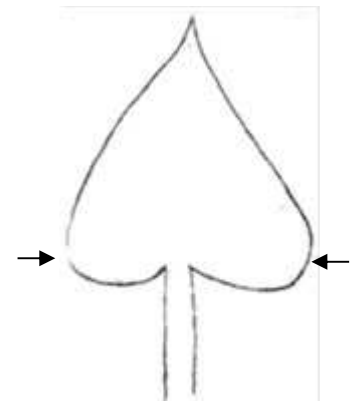
1  
at middle



2  
slightly towards base







3  
moderately towards base



4  
strongly towards base

Ad. 11: Leaf blade: shape

		←                      broadest part                      →	
		below middle	at middle
width (ratio length/width) → narrow (high) ← broad (low)	4 very narrow ovate		9 very narrow elliptic
	3 narrow ovate		8 narrow elliptic
	2 medium ovate		7 medium elliptic
	1 broad ovate		6 circular
			5 transverse elliptic

Ad. 12: Leaf blade: shape of base



1  
acute



2  
obtuse



3  
truncate



4  
cordate

Ad. 13: Leaf blade: shape of apex (excluding tip)



1  
acute



2  
obtuse



3  
rounded

Ad. 15: Leaf blade: colour 1: distribution

Ad. 19: Leaf blade: colour 2: distribution

Ad. 23: Leaf blade: colour 3: distribution

Ad. 27: Leaf blade: colour 4: distribution

Ad. 31: Leaf blade: colour 5: distribution



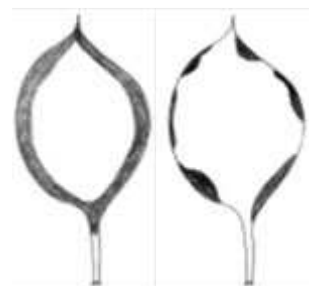
at basal zone



at centre



at top



at marginal zone



irregular



throughout

Ad. 16: Leaf blade: colour 1: pattern  
Ad. 20: Leaf blade: colour 2: pattern  
Ad. 24: Leaf blade: colour 3: pattern  
Ad. 28: Leaf blade: colour 4: pattern  
Ad. 32: Leaf blade: colour 5: pattern



1  
flamed (green)



2  
striped (light yellow)



3  
spotted (light yellow)



4  
in sectors (yellow green)



5  
marbled (grey green)



6  
marginated (white)

Ad. 17: Leaf blade: colour 1: total area  
Ad. 21: Leaf blade: colour 2: total area  
Ad. 25: Leaf blade: colour 3: total area  
Ad. 29: Leaf blade: colour 4: total area  
Ad. 33: Leaf blade: colour 5: total area

The area has to be compared to the whole area of the leaf surface.

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.

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



- 14. Leaf blade: colour 1 – RHS Colour Chart – ca. RHS 144 A - dark green
- 15. Leaf blade: colour 1: distribution – throughout (6)
- 16. Leaf blade: colour 1: pattern – solid or nearly solid (7)
- 17. Leaf blade: colour 1: total area – very large (9)
- 18. Leaf blade: colour 2 – RHS Colour Chart – not applicable
- 19. Leaf blade: colour 2: distribution – none (1)
- 20. Leaf blade: colour 2: pattern – not applicable

21. Leaf blade: colour 2: total area – not applicable
22. Leaf blade: colour 3 – RHS Colour Chart – not applicable
23. Leaf blade: colour 3: distribution – none (1)
24. Leaf blade: colour 3: pattern – not applicable
25. Leaf blade: colour 3: total area – not applicable
26. Leaf blade: colour 4 – RHS Colour Chart – not applicable
27. Leaf blade: colour 4: distribution – none (1)
28. Leaf blade: colour 4: pattern – not applicable
29. Leaf blade: colour 4: total area – not applicable
30. Leaf blade: colour 5 – RHS Colour Chart – not applicable
31. Leaf blade: colour 5: distribution – none (1)
32. Leaf blade: colour 5: pattern – not applicable
33. Leaf blade: colour 5: total area – not applicable

Worked Example Two – (variety with several leaf colour)



14. Leaf blade: colour 1 – RHS Colour Chart – ca. RHS 146 A – brown green
15. Leaf blade: colour 1: distribution – at marginal zone (4)
16. Leaf blade: colour 1: pattern – solid or nearly solid (7)
17. Leaf blade: colour 1: total area – medium (5)
18. Leaf blade: colour 2 – RHS Colour Chart – ca. RHS 151 A – green brown
19. Leaf blade: colour 2: distribution – irregular (6)
20. Leaf blade: colour 2: pattern – in sectors (4)
21. Leaf blade: colour 2: total area – small (3)
22. Leaf blade: colour 3 – RHS Colour Chart – ca. RHS 155 A - white
23. Leaf blade: colour 3: distribution – at centre (3)
24. Leaf blade: colour 3: pattern – flamed (1)
25. Leaf blade: colour 3: total area – small to medium (4)
26. Leaf blade: colour 4 – RHS Colour Chart – not applicable
27. Leaf blade: colour 4: distribution – none (1)
28. Leaf blade: colour 4: pattern – not applicable
29. Leaf blade: colour 4: total area – not applicable
30. Leaf blade: colour 5 – RHS Colour Chart – not applicable
31. Leaf blade: colour 5: distribution – none (1)
32. Leaf blade: colour 5: pattern – not applicable
33. Leaf blade: colour 5: total area – not applicable

Ad. 35: Leaf blade: number of parallel veins



1  
few



3  
many

Ad. 36: Leaf blade: degree of bulging



1  
absent or very weak



5  
very strong

Ad. 37: Leaf blade: blistering



1  
absent or weak

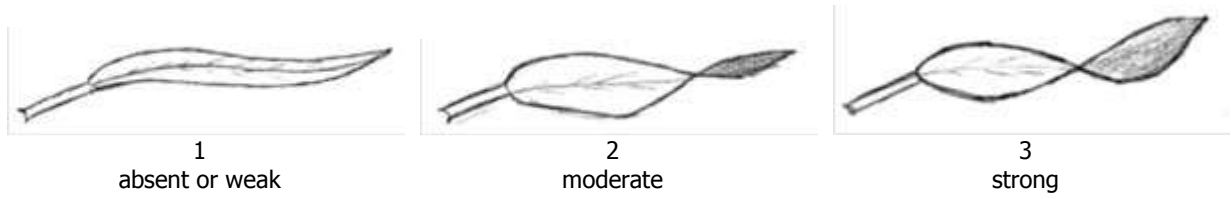


2  
medium



3  
strong

Ad. 39: Leaf blade: twisting



Ad. 40: Inflorescence: length



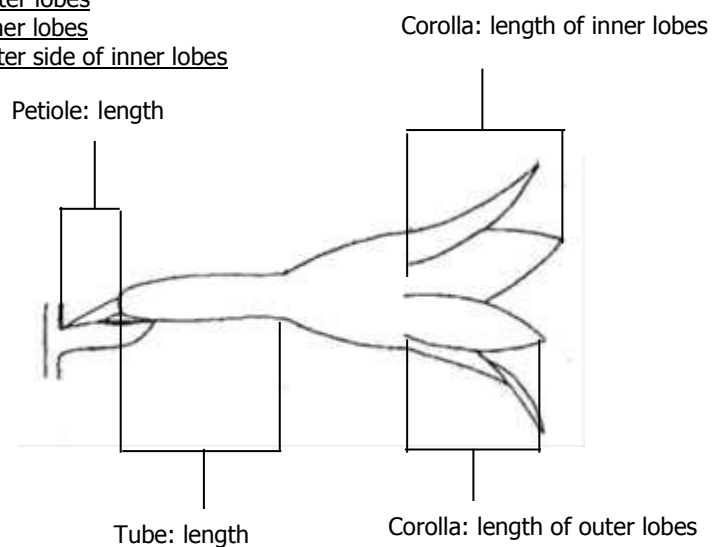
Ad. 49: Pedicel: length

Ad. 55: Corolla tube: length

Ad. 57: Corolla: length of outer lobes

Ad. 61: Corolla: length of inner lobes

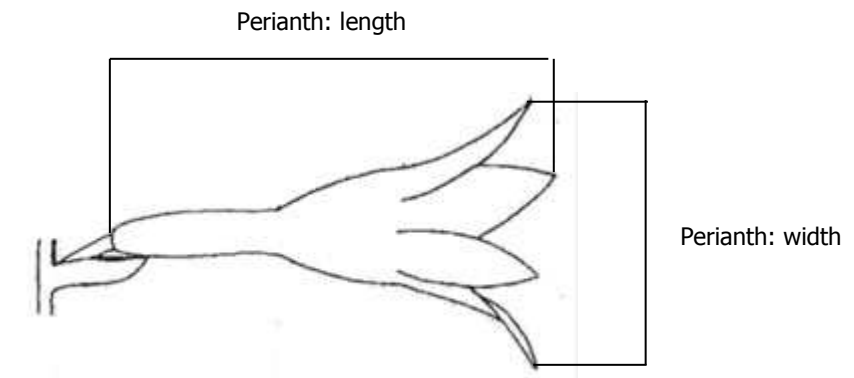
Ad. 63: Corolla: colour of outer side of inner lobes



Ad. 51: Flower: type

- |                 |                          |
|-----------------|--------------------------|
| 1) Single:      | 6 corolla lobes          |
| 2) Semi-double: | 7 to 11 corolla lobes    |
| 3) Double:      | 12 or more corolla lobes |

Ad. 52: Perianth: length  
Ad. 53: Perianth: width



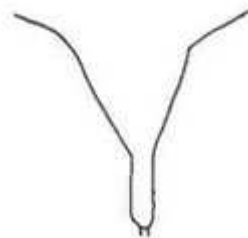
Ad. 54: Perianth: shape in lateral view



1  
tubular



2  
flared



3  
funnel







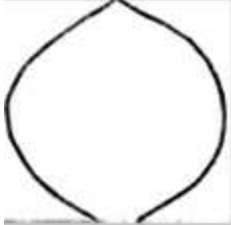
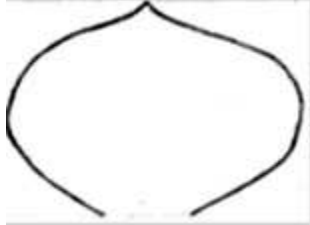


4  
campanulate



Ad. 58: Corolla: shape of outer lobes

Ad. 62: Corolla: shape of inner lobes

		← broadest part →	
		below middle	at middle
broad (low) ← width (ratio length/width) → narrow (high)	 4 very narrow ovate		
	 3 narrow ovate	 8 narrow elliptic	
	 2 medium ovate	 7 medium elliptic	
	 1 broad ovate	 6 circular	
		 5 broad elliptic	

## **9. LITERATURE**

Aden, P., 1988: The Hosta Book. Timber Press Inc. Portland Oregon. US, ISBN 0-88192-260-9

Grenfell, D., Shadrack, M., 2004: The color encyclopedia of Hostas. Timber Press Inc. Cambridge, GB, ISBN 0-88192-618-3

Shadrack, M., Shadrack, K., 2010: The Book of Little Hostas. Timber Press, London, GB, ISBN 978-1-60469-060-6

## **10. TECHNICAL QUESTIONNAIRE**

The Technical Questionnaire is available on the CPVO website under the following reference: CPVO-TQ/299/1