CPVO · OCVV
Community Plant Variety Office
Office Communautaire des Variétés Végétales

PROTOCOL FOR TESTS ON DISTINCTNESS, UNIFORMITY AND STABILITY

Aglaonema Schott

AGLAONEMA

UPOV Code: AGLAO

Adopted on 04/10/2017

Entry into force on 04/10/2017

TABLE OF CONTENTS

CPVO-TP/323/1

1. SUBJECT OF THE PROTOCOL AND REPORTING

1.1 Scope of the technical protocol

This Technical Protocol applies to all varieties of ***Aglaonema*** **Schott.**

The protocol describes the technical procedures to be followed in order to meet the requirements of Council Regulation 2100/94 on Community Plant Variety Rights. The technical procedures have been agreed by the Administrative Council and are based on documents agreed by the International Union for the Protection of New Varieties of Plants (UPOV), such as the General Introduction to DUS (UPOV Document TG/1/3 http://www.upov.int/export/sites/upov/resource/en/tg_1_3.pdf), its associated TGP documents (http://www.upov.int/tgp/en/) and the relevant UPOV Test Guideline TG/323/1 dated 04/05/2017 (http://www.upov.int/edocs/tgdocs/en/tg323.pdf) for the conduct of tests for Distinctness, Uniformity and Stability.

1.2 Entry into Force

The present protocol enters into force on **04.10.2017**. Any ongoing DUS examination of candidate varieties started before the aforesaid date will not be affected by the approval of the Technical Protocol. Technical examinations of candidate varieties are carried out according to the TP in force when the DUS test starts. The starting date of a DUS examination is considered to be the due date for submitting of plant material for the first test period.

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

1.3 Reporting between Examination Office and CPVO and Liaison with Applicant

1.3.1 Reporting between Examination Office and CPVO

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

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

The final report shall state the opinion of the Examination Office on the distinctness, uniformity and stability of the variety. Where it considers those criteria to be satisfied, or where the CPVO so requests, a description of the variety shall be added to the report. 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://cpvo.europa.eu/applications-and-examinations/technical-examinations/submission-of-plant-material-s2-publication in the special issue S2 of the Official Gazette of the Office. General requirements on submission of samples are also to be found following the same link.

2.2 Informing the applicant of plant material requirements

The CPVO informs the applicant that

- he is responsible for ensuring compliance with any customs and plant health requirements.
- the plant material supplied should be visibly healthy, not lacking in 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 a single growing cycle.

3.2 Testing Place

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 "Examining Distinctness" http://www.upov.int/edocs/tgpdocs/en/tgp_9.pdf.

3.3 Conditions for Conducting the Examination

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

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

3.4 Test design

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

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

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 EO unless special cooperation exists between EOs and the CPVO. The descriptive and pictorial information produced by the EO shall be held and maintained in a form of a database.

3.6.2 Living Plant Material

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

3.6.4 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.

3.6.5 Maintenance and renewal/update of a living variety collection

The EO shall maintain the variety collection under appropriate growing conditions (e.g. glasshouse, orchard, in vitro), where it shall be ensured that the plants are adequately irrigated, fertilised, pruned and protected from harmful pests and diseases. For the renewal of existing living material the identity of replacement living plant material shall be verified by conducting side-by-side plot comparisons between the material in the collection and the new material or by checking the identity of the new material against the variety description.

4. ASSESSMENT OF DISTINCTNESS, UNIFORMITY AND STABILITY

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

4.1 Distinctness

4.1.1 General recommendations

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

4.1.2 Consistent differences

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

4.1.3 Clear differences

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

4.1.4 Number of plants/parts of plants to be examined

Unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 9 plants or parts taken from each of 9 plants and any other observations made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 1.

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

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

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.

4.2.2 This Test Guidelines has been developed for the examination of vegetatively propagated varieties. For varieties with other types of propagation the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species", Section 4.5 "Testing Uniformity" should be followed.

4.3 Stability

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

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

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

4.3.3 Where appropriate, or in cases of doubt, the stability of a hybrid variety may, in addition to an examination of the hybrid variety itself, also be assessed by examination of the uniformity and stability of its parent lines.

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: length (characteristic 9)

b) Leaf blade: width (characteristic 10)

c) Leaf blade: colour covering the largest surface area on upper side, with the following colour groups:
Gr. 1: white
Gr. 2: green
Gr. 3: grey green
Gr. 4: yellow
Gr. 5: red
Gr. 6: red purple

d) Leaf blade: colour covering the second largest surface area on upper side, with the following colour groups:
Gr. 1: white
Gr. 2: green
Gr. 3: grey green
Gr. 4: yellow
Gr. 5: red
Gr. 6: red purple

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 EO 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 column 'CPVO N°':

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

For column 'UPOV N°':

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

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

For column 'Stage, method':

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

7. TABLE OF CHARACTERISTICS

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
1.	**1.**	**MG/VG**	**Plant: height**		
QN			short	Subrungrueng	3
			medium	Chalit's Pride	5
			tall	Thep Ranjuan	7
2. (+)	**2.**	**MS/VG**	**Plant: number of basal shoots**		
QN			absent or few	Cassic	1
			medium	Katharngen	2
			many	Chaowang	3
3. (+)	**3. (*)**	**MS/VG**	**Leaf sheath: length**		
QN		**(a)**	absent or very short	World Heritage	1
			short	Bebadary	3
			medium	Pritty	5
			long	Katharngen	7
4. (+)	**4.**	**VG**	**Leaf sheath: shoulder shape**		
QN		**(a)**	strongly curved	Katharngen	1
			weakly curved		2
			squared	Supmongkon	3
			weakly pointed		4
			strongly pointed	Saisamorn	5
5.	**5. (*)**	**VG**	**Leaf sheath: main colour of outer side**		
PQ		**(a), (b)**	RHS Colour Chart (indicate reference number)		
6. (+)	**6.**	**MS/VG**	**Petiole: length**		
QN		**(a)**	short		3
			medium	Chalit's Pride	5
			long	Katharngen	7

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
7.	**7.**	**VG**	**Petiole: main colour**		
PQ		**(a), (b)**	RHS Colour Chart (indicate reference number)		
8.	**8. (*)**	**VG**	**Petiole: secondary colour (if present)**		
PQ		**(a), (b)**	RHS Colour Chart (indicate reference number)		
9. (+)	**9. (*)**	**MS/VG**	**Leaf blade: length**		
QN		**(a)**	short	Black Beauty	3
			medium	Tiara	5
			long	Thep Ranjuan	7
10. (+)	**10. (*)**	**MS/VG**	**Leaf blade: width**		
QN		**(a)**	narrow	Thep Ranjuan	3
			medium	Katharngen	5
			broad	World Heritage	7
11. (+)	**11.**	**MS/VG**	**Leaf blade: ratio length/width**		
QN		**(a)**	low	Parumruay	3
			medium	Katharngen	5
			high		7
12. (+)	**12. (*)**	**VG**	**Leaf blade: position of broadest part**		
QN		**(a)**	toward base	Ribbon Evergreen	1
			at middle	Pride of Sumatra	2
			toward apex	Ik Q San	3
13. (+)	**13.**	**VG**	**Leaf blade: shape of apex**		
QN		**(a)**	strongly acute		1
			moderately acute		2
			obtuse		3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
14. (+)	**14. (*)**	**VG**	**Leaf blade: shape of base**		
PQ		**(a)**	attenuate	Thep Ranjuan	1
			acute		2
			obtuse	Chalit's Pride	3
			truncate		4
			cordate	World Heritage	5
15.	**15. (*)**	**VG**	**Leaf blade: colour 1**		
PQ		**(a), (c), (d)**	RHS Colour Chart (indicate reference number)		
16.	**16. (*)**	**VG**	**Leaf blade: distribution of colour 1**		
PQ		**(a), (c)**	single coloured		1
		(d), (e)	along midrib		2
			at margin		3
			between midrib and margin		4
			along veins		5
			between veins		6
			throughout		7
			along midrib and at margin		8
			along midrib and along veins		9
			along midrib and throughout		10
			along veins and between veins		11
			at margin and throughout		12
			along midrib, along veins and throughout		13
			along midrib, along veins and between veins		14
			along midrib, at margin and along veins		15

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
17.	**17. (*)**	**VG**	**Leaf blade: pattern of colour 1**		
PQ		**(a), (c)**	blotches		1
		(d), (f)	central bar		2
			stripes		3
			marginal zone		4
			solid or nearly solid		5
			blotches and central bar		6
			blotches and stripes		7
			blotches and marginal zone		8
			central bar and stripes		9
			central bar and marginal zone		10
18.	**18. (*)**	**VG**	**Leaf blade: colour 1: size of blotches**		
QN		**(a), (c)**	small		1
		(g)	medium		2
			large		3
19.	**19. (*)**	**VG**	**Leaf blade: total area of colour 1**		
QN		**(a), (c)**	small		3
		(d)	medium		5
			large		7
20.	**20. (*)**	**VG**	**Leaf blade: colour 2**		
PQ		**(a), (c), (d)**	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
21.	**21. (*)**	**VG**	**Leaf blade: distribution of colour 2**		
PQ		**(a), (c)**	none		1
		(d), (e)	along midrib		2
			at margin		3
			between midrib and margin		4
			along veins		5
			between veins		6
			throughout		7
			along midrib and at margin		8
			along midrib and along veins		9
			along midrib and throughout		10
			along veins and between veins		11
			at margin and throughout		12
			along midrib, along veins and throughout		13
			along midrib, along veins and between veins		14
			along midrib, at margin and along veins		15

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
22.	**22. (*)**	**VG**	**Leaf blade: pattern of colour 2**		
PQ		**(a), (c)**	blotches		1
		(d), (f)	central bar		2
			stripes		3
			marginal zone		4
			solid or nearly solid		5
			blotches and central bar		6
			blotches and stripes		7
			blotches and marginal zone		8
			central bar and stripes		9
			central bar and marginal zone		10
23.	**23. (*)**	**VG**	**Leaf blade: colour 2: size of blotches**		
QN		**(a), (c)**	small		1
		(g)	medium		2
			large		3
24.	**24. (*)**	**VG**	**Leaf blade: total area of colour 2**		
QN		**(a), (c)**	small		3
		(d)	medium		5
			large		7
25.	**25. (*)**	**VG**	**Leaf blade: colour 3**		
PQ		**(a), (c), (d)**	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
26.	**26. (*)**	**VG**	**Leaf blade: distribution of colour 3**		
PQ		**(a), (c)**	none		1
		(d), (e)	along midrib		2
			at margin		3
			between midrib and margin		4
			along veins		5
			between veins		6
			throughout		7
			along midrib and at margin		8
			along midrib and along veins		9
			along midrib and throughout		10
			along veins and between veins		11
			at margin and throughout		12
			along midrib, along veins and throughout		13
			along midrib, along veins and between veins		14
			along midrib, at margin and along veins		15

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
27.	**27. (*)**	**VG**	**Leaf blade: pattern of colour 3**		
PQ		**(a), (c)**	blotches		1
		(d), (f)	central bar		2
			stripes		3
			marginal zone		4
			solid or nearly solid		5
			blotches and central bar		6
			blotches and stripes		7
			blotches and marginal zone		8
			central bar and stripes		9
			central bar and marginal zone		10
28.	**28. (*)**	**VG**	**Leaf blade: colour 3: size of blotches**		
QN		**(a), (c)**	small		1
		(g)	medium		2
			large		3
29.	**29. (*)**	**VG**	**Leaf blade: total area of colour 3**		
QN		**(a), (c)**	small		3
		(d)	medium		5
			large		7
30.	**30. (*)**	**VG**	**Leaf blade: colour 4**		
PQ		**(a), (c), (d)**	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
31.	**31. (*)**	**VG**	**Leaf blade: distribution of colour 4**		
PQ		**(a), (c)**	none		1
		(d), (e)	along midrib		2
			at margin		3
			between midrib and margin		4
			along veins		5
			between veins		6
			throughout		7
			along midrib and at margin		8
			along midrib and along veins		9
			along midrib and throughout		10
			along veins and between veins		11
			at margin and throughout		12
			along midrib, along veins and throughout		13
			along midrib, along veins and between veins		14
			along midrib, at margin and along veins		15

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
32.	**32. (*)**	**VG**	**Leaf blade: pattern of colour 4**		
PQ		**(a), (c)**	blotches		1
		(d), (f)	central bar		2
			stripes		3
			marginal zone		4
			solid or nearly solid		5
			blotches and central bar		6
			blotches and stripes		7
			blotches and marginal zone		8
			central bar and stripes		9
			central bar and marginal zone		10
33.	**33. (*)**	**VG**	**Leaf blade: colour 4: size of blotches**		
QN		**(a), (c)**	small		1
		(g)	medium		2
			large		3
34.	**34. (*)**	**VG**	**Leaf blade: total area of colour 4**		
QN		**(a), (c)**	small		3
		(d)	medium		5
			large		7
35.	**35. (*)**	**VG**	**Leaf blade: colour 1 on lower side**		
PQ		**(a), (d)**	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
36.	**36. (*)**	**VG**	**Leaf blade: distribution of colour 1 on lower side**		
PQ		**(a), (d)**	single coloured		1
		(e)	along midrib		2
			at margin		3
			between midrib and margin		4
			along veins		5
			between veins		6
			throughout		7
			along midrib and at margin		8
			along midrib and along veins		9
			along midrib and throughout		10
			along veins and between veins		11
			at margin and throughout		12
			along midrib, along veins and throughout		13
			along midrib, along veins and between veins		14
			along midrib, at margin and along veins		15

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
37.	**37. (*)**	**VG**	**Leaf blade: pattern of colour 1 on lower side**		
PQ		**(a), (d)**	blotches		1
		(f)	central bar		2
			stripes		3
			marginal zone		4
			solid or nearly solid		5
			blotches and central bar		6
			blotches and stripes		7
			blotches and marginal zone		8
			central bar and stripes		9
			central bar and marginal zone		10
38.	**38. (*)**	**VG**	**Leaf blade: colour 1 on lower side: size of blotches**		
QN		**(a), (g)**	small		1
			medium		2
			large		3
39.	**39. (*)**	**VG**	**Leaf blade: total area of colour 1 on lower side**		
QN		**(a), (d)**	small		3
			medium		5
			large		7
40.	**40. (*)**	**VG**	**Leaf blade: colour 2 on lower side**		
PQ		**(a), (d)**	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
41.	**41. (*)**	**VG**	**Leaf blade: distribution of colour 2 on lower side**		
PQ		**(a), (d)**	none		1
		(e)	along midrib		2
			at margin		3
			between midrib and margin		4
			along veins		5
			between veins		6
			throughout		7
			along midrib and at margin		8
			along midrib and along veins		9
			along midrib and throughout		10
			along veins and between veins		11
			at margin and throughout		12
			along midrib, along veins and throughout		13
			along midrib, along veins and between veins		14
			along midrib, at margin and along veins		15

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
42.	**42. (*)**	**VG**	**Leaf blade: pattern of colour 2 on lower side**		
PQ		**(a), (d)**	blotches		1
		(f)	central bar		2
			stripes		3
			marginal zone		4
			solid or nearly solid		5
			blotches and central bar		6
			blotches and stripes		7
			blotches and marginal zone		8
			central bar and stripes		9
			central bar and marginal zone		10
43.	**43. (*)**	**VG**	**Leaf blade: colour 2 on lower side: size of blotches**		
QN		**(a), (g)**	small		1
			medium		2
			large		3
44.	**44. (*)**	**VG**	**Leaf blade: total area of colour 2 on lower side**		
QN		**(a), (d)**	small		3
			medium		5
			large		7
45.	**45. (*)**	**VG**	**Leaf blade: colour 3 on lower side**		
PQ		**(a), (d)**	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
46.	**46. (*)**	**VG**	**Leaf blade: distribution of colour 3 on lower side**		
PQ		**(a), (d)**	none		1
		(e)	along midrib		2
			at margin		3
			between midrib and margin		4
			along veins		5
			between veins		6
			throughout		7
			along midrib and at margin		8
			along midrib and along veins		9
			along midrib and throughout		10
			along veins and between veins		11
			at margin and throughout		12
			along midrib, along veins and throughout		13
			along midrib, along veins and between veins		14
			along midrib, at margin and along veins		15

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
47.	**47. (*)**	**VG**	**Leaf blade: pattern of colour 3 on lower side**		
PQ		**(a), (d)**	blotches		1
		(f)	central bar		2
			stripes		3
			marginal zone		4
			solid or nearly solid		5
			blotches and central bar		6
			blotches and stripes		7
			blotches and marginal zone		8
			central bar and stripes		9
			central bar and marginal zone		10
48.	**48. (*)**	**VG**	**Leaf blade: colour 3 on lower side: size of blotches**		
QN		**(a), (g)**	small		1
			medium		2
			large		3
49.	**49. (*)**	**VG**	**Leaf blade: total area of colour 3 on lower side**		
QN		**(a), (d)**	small		3
			medium		5
			large		7
50.	**50. (*)**	**VG**	**Leaf blade: glossiness**		
QN		**(a), (c)**	absent or weak	Katharngen	1
			medium		2
			strong	Black Beauty	3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
51. (+)	**51. (*)**	**VG**	**Leaf blade: blistering**		
QN		**(a)**	absent or weak	Katharngen	1
			medium	Tiara	2
			strong		3
52.	**52. (*)**	**VG**	**Leaf blade: undulation of margin**		
QN		**(a)**	absent or very weak	Chalit's Pride	1
			weak	Katharngen	2
			medium	Saisamorn	3
			strong		4
			very strong	Black Beauty	5
53. (+)	**53. (*)**	**VG**	**Leaf blade: profile in cross section**		
QN		**(a)**	flat	Katharngen	1
			slightly concave		2
			moderately concave	Tiara	3
54. (+)	**54. (*)**	**MS/VG**	**Leaf blade: number of veins**		
QN		**(a)**	few	Black Beauty	1
			medium		2
			many	Kwakngen	3
55. (+)	**55. (*)**	**VG**	**Leaf blade: position at midrib**		
QN		**(a)**	raised	Legacy	1
			level	Katharngen	2
			sunken	Russamithong	3

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) Unless otherwise indicated, observations on the leaf should be made on fully grown leaves from the middle third of the plant.

b) The main colour is the colour with the largest surface area. In case where the areas of the main and secondary colour are too similar to reliably decide which colour has the largest area, the darker colour is considered to be the main colour.

c) To be observed on the upper side of leaves.

d) Where the characteristics refer to colours as "colour 1", "colour 2" etc., they are to be recorded in the order that they appear on the RHS chart, i.e. colour 1 is the one with the lowest number, colour 2 with the second lowest and so on. For example, if the leaves are Green 137A patched with White 155A, Green 137A will be a colour 1 and White 155A colour 2. If two colours are on the same page 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 3 or 4. The Guideline makes provision for four colours, if there are more, the colour(s) with the smallest surface area(s) should be disregarded.

In *Aglaonema* leaf colour is very significant to the overall appearance of the variety. Leaves often have several colours in different patterns. This guideline allows the description of up to four colours using the RHS Colour Charts as well as the distributions, the patterns formed and the areas covered. Although the colours are referred to as "colour 1", "colour 2", "colour 3" and "colour 4" in the headings, this does not indicate a ranking according to prominence or area covered. The order in which the colours should be observed is dictated by the order the colours appear in the RHS Colour Charts, as described in the paragraph above. Example varieties have not been provided for the leaf colour characteristics. This is because the number of combinations of observations that this guideline allows for is larger than the number of combinations seen. Providing example varieties for all states of expression in these cases would be misleading. In order to provide an illustration of the recording method, different worked examples are provided as follows:

Example one: Pride of Sumatra (variety with three leaf colours)

15 Leaf blade: colour 1	Red 50A
16 Leaf blade: distribution of colour 1	7 along midrib and at margin
17 Leaf blade: pattern of colour 1	10 central bar and marginal zone
18 Leaf blade: colour 1: size of blotches	not applicable
19 Leaf blade: total area of colour 1	1 very small
20 Leaf blade: colour 2	Green 138A
21 Leaf blade: distribution of colour 2	7 throughout
22 Leaf blade: pattern of colour 2	5 solid or nearly solid
23 Leaf blade: colour 2: size of blotches	not applicable
24 Leaf blade: total area of colour 2	7 large
25 Leaf blade: colour 3	Yellow Green 145C
26 Leaf blade: distribution of colour 3	4 along veins
27 Leaf blade: pattern of colour 3	3 stripes
28 Leaf blade: colour 3: size of blotches	not applicable

29 Leaf blade: total area of colour 3	1 very small
30 Leaf blade: colour 4	not applicable
31 Leaf blade: distribution of colour 4	none
32 Leaf blade: pattern of colour 4	not applicable
33 Leaf blade: colour 4: size of blotches	not applicable
34 Leaf blade: total area of colour 4	not applicable

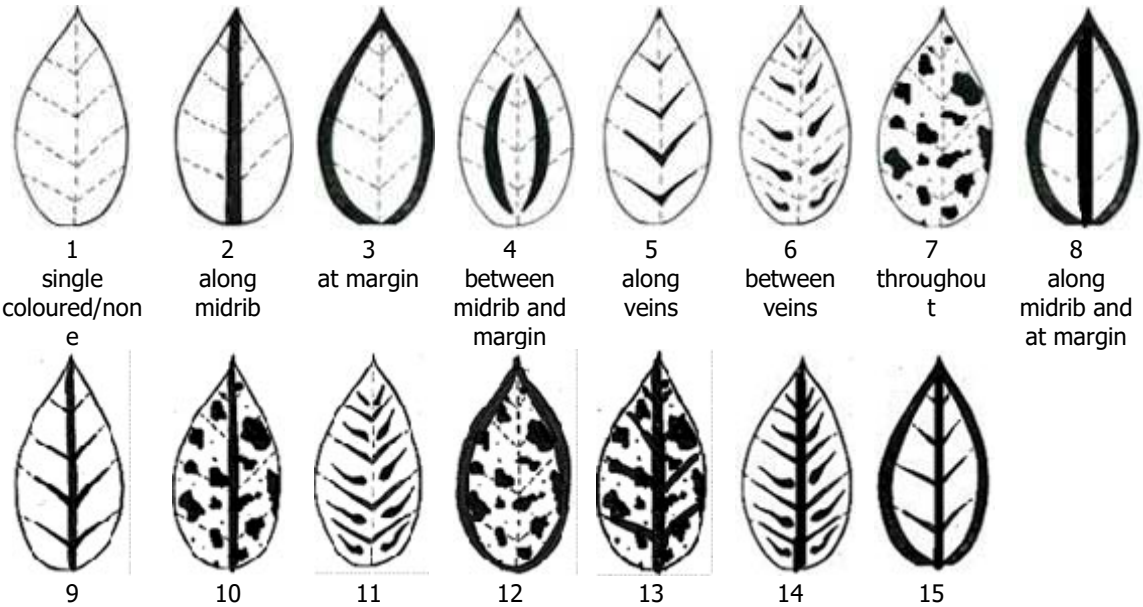
Example two: Spotted Evergreen (variety with three leaf colours)

15 Leaf blade: colour 1	Green N137A
16 Leaf blade: distribution of colour 1	6 throughout
17 Leaf blade: pattern of colour 1	5 solid or nearly solid
18 Leaf blade: colour 1: size of blotches	not applicable
19 Leaf blade: total area of colour 1	7 large
20 Leaf blade: colour 2	Yellow Green 151B
21 Leaf blade: distribution of colour 2	7 throughout
22 Leaf blade: pattern of colour 2	1 blotches
23 Leaf blade: colour 2: size of blotches	1 small
24 Leaf blade: total area of colour 2	1 very small
25 Leaf blade: colour 3	White NN155B
26 Leaf blade: distribution of colour 3	2 along midrib
27 Leaf blade: pattern of colour 3	2 central bar
28 Leaf blade: colour 3: size of blotches	not applicable
29 Leaf blade: total area of colour 3	1 very small
30 Leaf blade: colour 4	not applicable
31 Leaf blade: distribution of colour 4	none
32 Leaf blade: pattern of colour 4	not applicable
33 Leaf blade: colour 4: size of blotches	not applicable
34 Leaf blade: total area of colour 4	not applicable

Example three: Pride of Sumatra (variety with two leaf colours on lower side)

35 Leaf blade: colour 1 on lower side	Red Purple 64C
36 Leaf blade: distribution of colour 1 on lower side	13 along midrib, along veins and between veins
37 Leaf blade: pattern of colour 1 on lower side	9 central bar and stripes
38 Leaf blade: colour 1 on lower side: size of blotches	not applicable
39 Leaf blade: total area of colour 1 on lower side	4 small to medium
40 Leaf blade: colour 2 on lower side	Greyed Purple N186B
41 Leaf blade: distribution of colour 2 on lower side	7 throughout
42 Leaf blade: pattern of colour 2 on lower side	5 solid or nearly solid
43 Leaf blade: colour 2 on lower side: size of blotches	not applicable
44 Leaf blade: total area of colour 2 on lower side	5 medium
45 Leaf blade: colour 3 on lower side	not applicable
46 Leaf blade: distribution of colour 3 on lower side	none
47 Leaf blade: pattern of colour 3 on lower side	not applicable
48 Leaf blade: colour 3 on lower side: size of blotches	not applicable
49 Leaf blade: total area of colour 3 on lower side	not applicable

e) Leaf blade: distribution of colour should be observed as illustrated below. State "along midrib" may include state "on mid rib". The term "veins" means primary lateral veins. States of expression including "along veins" may not include all primary veins.



1 single coloured/none

2 along midrib

3 at margin

4 between midrib and margin

5 along veins

6 between veins

7 throughout

8 along midrib and at margin

9 along midrib

10 along midrib and throughout

11 along veins and between veins

12 at margin and throughout

13 along midrib, along veins and throughout

14 along midrib, along veins and between veins

15 along midrib, at margin and along veins

f) Leaf blade: pattern of colours should be observed as follows:

1
blotches

grey green

2
central bar

white

3
stripes

grey green

4
marginal zone

dark green

5
solid or nearly solid

dark green

6
blotches and central bar
white

7
blotches and stripes
pink

8
blotches and marginal zone
green

9
central bar and stripes
red

10
central bar and marginal zone
red

g) Leaf blade: pattern of colours: size of blotches should be observed as follows:

1
small
indicated by green blotches

2
medium
indicated by grey green blotches

3
large
indicated by dark green blotches

8.2 Explanations for individual characteristics

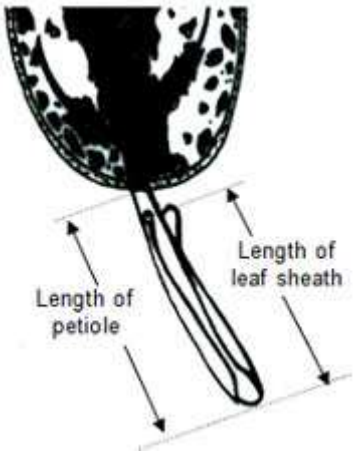
Ad. 2: Plant: number of basal shoots

1
absent or very few

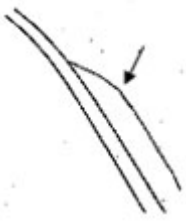
2
medium

3
many

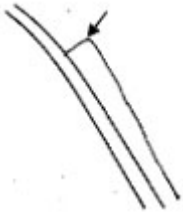
Ad. 3: Leaf sheath: length



Ad. 4: Leaf sheath: shoulder shape



1
strongly curved



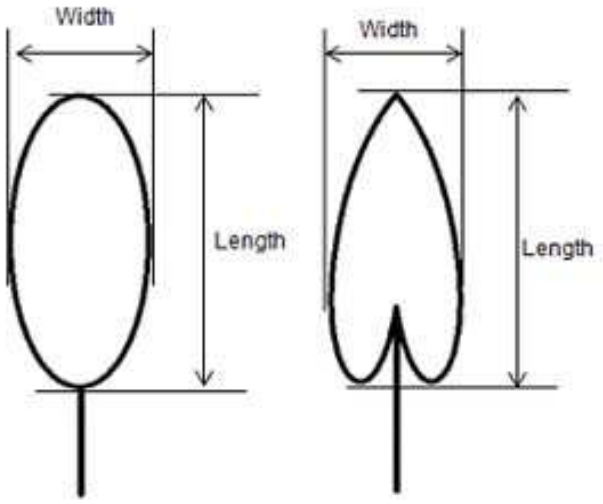
3
squared

5
strongly pointed

Ad. 6: Petiole: length

See Ad. 3.

Ad. 9: Leaf blade: length



Ad. 10: Leaf blade: width

See Ad. 9.

Ad. 11: Leaf blade: ratio length/width

3
low

5
medium

7
high

Ad. 12: Leaf blade: position of broadest part

1
toward base

2
at middle

3
toward apex

Ad. 13: Leaf blade: shape of apex

1
strongly acute

2
moderately acute

3
obtuse

Ad. 14: Leaf blade: shape of base

1
attenuate

2
acute

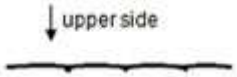
3
obtuse

4
truncate

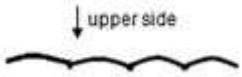
5
cordate

Ad. 51: Leaf blade: blistering

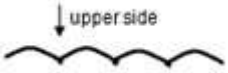
The following diagram indicates the longitudinal section of the leaf blade.



1
absent or weak



2
medium



3
strong

Ad. 53: Leaf blade: profile in cross section

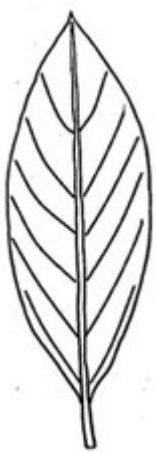
1
flat

2
slightly concave

3
moderately concave

Ad. 54: Leaf blade: number of veins

To be observed on the lower side of the leaf.

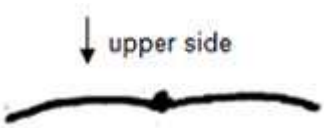


1
few

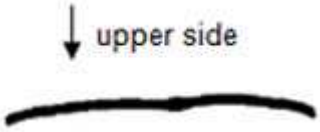
2
medium

3
many

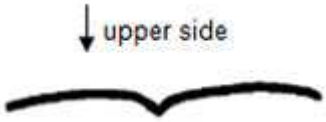
Ad. 55: Leaf blade: position of midrib



1
raised



2
level



3
sunken

9. LITERATURE

Nicolson, D.H., 1969: A revision of genus *Aglaonema* (Araceae). Smithsonian Institution Press. Washington, US, 63 pp.

Sinchaisri, N., 2006: Catalog of Aglaonema in Thailand. Mitkaset Marketting and Advertisement company, Bangkok, TH, 180 pp.

Thanabud, P., 2000: Aglaonema, Amarin Printing and Publishing Public Co., Ltd. Thailand, 239 pp.

10. TECHNICAL QUESTIONNAIRE

The Technical Questionnaire is available on the CPVO website under the following reference: CPVO-TQ/323/1