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

PROTOCOL FOR TESTS ON DISTINCTNESS, UNIFORMITY AND STABILITY

Anthurium Schott

ANTHURIUM

UPOV Code: ANTHU

Adopted on 28/11/2023

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CPVO-TP/086/2 based on the version 5 of the CPVO-TP/template

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CPVO-TP/086/2

1. SUBJECT OF THE PROTOCOL AND REPORTING

1.1 Scope of the technical protocol

This Technical Protocol applies to all varieties of *Anthurium* 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/86/6 dated 25/10/2022 (https://www.upov.int/edocs/tgdocs/en/tg086.pdf) for the conduct of tests for Distinctness, Uniformity and Stability.

1.2 Entry into Force

The present protocol enters into force on **28.11.2023**. 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 growing cycle.

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 four weeks after the date of the request for technical examination by the CPVO and in any case preferably before the submission period of the plant material.

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

In cases where the Examination Office identifies issues during the course of the technical examination that may lead to a negative report, the Examination Office shall inform the CPVO and in urgent cases the applicant/holder as soon as such issues become obvious.

1.3.3 Sample keeping in case of problems

As far as feasible the Examination Office shall keep a representative sample of any relevant testing material of the candidate variety and reference variety(ies) if the technical examination has resulted in a negative report. As soon as possible, the CPVO shall inform the Examination Office when the material can be destroyed.

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 https://public.plantvarieties.eu/publication in the special issue S2/S3 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 submission of plant 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 in writing.

3. METHOD OF EXAMINATION

3.1 Number of growing cycles

The minimum duration of tests should normally be a single growing cycle.

The testing of a variety may be concluded when the entrusted examination office can determine with certainty the outcome of the test.

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

3.4.1 Each test should be designed to result in a total of at least 6 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 Special tests for additional characteristics

In accordance with Article 23 of Implementing Rules N° 874/2009 an applicant may claim either in the Technical Questionnaire or during the test that a candidate has a characteristic which would be helpful in establishing distinctness. If such a claim is made and is supported by reliable technical data, a special test may be undertaken providing that a technically acceptable test procedure can be devised.

Special tests will be undertaken, with the agreement of the President of CPVO, where distinctness is unlikely to be shown using the characteristics 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 variety collection shall comprise images (e.g., photographs, illustrations or digitalized images) of representative parts of the plants of each variety, produced by the respective EO. 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 may only obtain living plant material of reference varieties as and when those varieties need to be included in growing trials or other tests.

Living plant material of reference varieties identified to be included in the growing trial may be taken from the EO's collection in case there is one or shall be obtained specifically for the growing trial 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, varieties in trade or in commercial registers.
The inventory shall take into account the list of varieties which are the subject of an on-going application for protection or official registration (candidate varieties).

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

- relevant example varieties referred to in the technical protocols;
- 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.

3.6.4 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.
Living material in variety collections representing varieties for which a DUS test was carried out at that EO shall be renewed after verification in a side-by-side comparison. In case where no living material is available anymore in the collection, such verification could be done with any other test that has proven to give similar results between the material in the collection and the new material.

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.

Further guidance is provided in documents TGP/9 "Examining Distinctness" and TGP/8 "Trial Design and Techniques Used in the Examination of Distinctness, Uniformity and Stability".

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 5 plants or parts taken from each of 5 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

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:

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

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 6 plants, 1 off-type is 1 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/edocs/tgpdocs/en/tgp_11.pd).

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 ORGANISATION 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 organise the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

a) Plant: height (characteristic 1)

b) Inflorescence: number of spathes (characteristic 16)

c) Spathe: length (characteristic 17)

d) Spathe: main colour of <u>upper</u> side (characteristic 25) with the following groups:

Gr. 1: white
Gr. 2: green
Gr. 3: yellow
Gr. 4: orange
Gr. 5: pink
Gr. 6: red
Gr. 7: purple
Gr. 8: brown

e) Spathe: secondary colour of <u>upper</u> side (characteristic 26) with the following groups:

Gr. 1: none
Gr. 2: white
Gr. 3: green
Gr. 4: yellow
Gr. 5: orange
Gr. 6: pink
Gr. 7: red
Gr. 8: purple
Gr. 9: brown

f) Spathe: distribution of secondary colour of <u>upper</u> side (characteristic 27)

g) Spadix: rolling (characteristic 36)

h) Spadix: main colour of basal part (characteristic 39)

i) Spadix: main colour of distal part (characteristic 41)

5.4 If characteristics other than those mentioned in the list of grouping characteristics and/or from the table of characteristics and/or from the Technical Questionnaire – sections 5 and 7. 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.

5.5 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the UPOV-General Introduction to DUS and document TGP/9 "Examining Distinctness".

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.

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. All relevant states of expression are presented in the characteristic.

Further explanation of the presentation of states of expression and notes is provided in UPOV document TGP/7 "Development of Test Guidelines".

6.3 Example Varieties

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

6.4 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 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)-(c)	Explanations covering several Characteristics	-see Chapter 8.1

7. TABLE OF CHARACTERISTICS

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
1. (+)	**1. (*)**	**MG/MS /VG**	**Plant: height**		
QN			very short		1
			very short to short		2
			short	ANTHDOSDOH	3
			short to medium		4
			medium	ANTHCAPBUK	5
			medium to tall		6
			tall	ANTHARYSIA	7
			tall to very tall		8
G			very tall		9
2. (+)	**2. (*)**	**MG/MS /VG**	**Leaf blade: length**		
QN		**(a)**	very short		1
			very short to short		2
			short	ANTHEPEDI	3
			short to medium		4
			medium	ANTHCAPBUK	5
			medium to long		6
			long	ANTHARYSIA	7
			long to very long		8
			very long		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
3. (+)	**3. (*)**	**MG/MS /VG**	**Leaf blade: width**		
QN		**(a)**	very narrow		1
			very narrow to narrow		2
			narrow	RYN2009006	3
			narrow to medium		4
			medium	ANTHCAPBUK	5
			medium to broad		6
			broad	ANTHAQUIRE	7
			broad to very broad		8
			very broad		9
4. (+)	**4. (*)**	**MG/MS /VG**	**Leaf blade: ratio length/width**		
QN		**(a)**	very low		1
			very low to low		2
			low		3
			low to medium		4
			medium	ANTHCAMZIP	5
			medium to high		6
			high	ANTHDUBAQ	7
			high to very high		8
			very high	ANTHDOSDOH	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
5. (+)	**5. (*)**	**VG**	**Leaf blade: size of lobes**		
QN		**(a)**	absent or very small	ANTHDOSDOH	1
			very small to small		2
			small	ANTHZUPAP	3
			small to medium		4
			medium	ANTHCOTBIK	5
			medium to large		6
			large	ANTHAQUIRE	7
			large to very large		8
			very large		9
6. (+)	**6.**	**VG**	**Leaf blade: relative position of lobes at base**		
PQ		**(a)**	incurved but not touching	RIJN200449	1
			free	ANTHEPEDI	2
			touching	ANTHQUODO	3
			overlapping		4
			adpressed		5
7. (+)	**7.**	**VG**	**Leaf blade: angle of apex**		
PQ		**(a)**	acute		1
			approximately right angle		2
			obtuse		3
8. (+)	**8. (*)**	**VG**	**Leaf blade: differentiated tip**		
PQ		**(a)**	absent		1
			narrow acuminate		2
			medium acuminate		3
			broad acuminate		4

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
9.	**9.**	**VG**	**Leaf blade: intensity of green colour of upper side**		
QN		**(a)**	very light		1
			very light to light		2
			light	ANTHDOSDOH	3
			light to medium		4
			medium	ANTHBNZL	5
			medium to dark		6
			dark	ANTHARYSIA	7
			dark to very dark		8
			very dark		9
10.	**10.**	**VG**	**Leaf blade: blistering**		
QN		**(a)**	absent or very weak	ANTHDOSDOH	1
			very weak to weak		2
			weak	ANTHCIMWI	3
			weak to medium		4
			medium	ANTHCAPBUK	5
			medium to strong		6
			strong	ANTHAHOTO	7
			strong to very strong		8
			very strong		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
11.	**11.**	**MG/MS /VG**	**Petiole: length**		
QN		**(a)**	very short		1
			very short to short		2
			short	ANTHEBENEX	3
			short to medium		4
			medium	ANTHBNZL	5
			medium to long		6
			long	ANTHAQUIRE	7
			long to very long		8
			very long		9
12.	**12. (*)**	**MG/MS /VG**	**Peduncle: length**		
QN		**(b)**	very short		1
			very short to short		2
			short	ANTHEPEDI	3
			short to medium		4
			medium	ANTHCAPBUK	5
			medium to long		6
			long	ANTHAQUIRE	7
			long to very long		8
			very long		9
13. (+)	**13.**	**MG/MS /VG**	**Peduncle: thickness**		
QN		**(b)**	very thin		1
			thin	ANTHEPEDI	2
			medium	ANTHCAPBUK	3
			thick	ANTHAQUIRE	4
			very thick		5

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
14.	**14.**	**VG**	**Peduncle: anthocyanin coloration**		
QN		**(b)**	absent or very weak	ANTHCAPBUK	1
			very weak to weak		2
			weak	ANTHBNZL	3
			weak to medium		4
			medium		5
			medium to strong		6
			strong	ANTHEBENEX	7
			strong to very strong		8
			very strong		9
15. (+)	**15. (*)**	**VG**	**Inflorescence: position in relation to foliage**		
QN		**(b)**	below		1
			same level	ANTHBNEK	2
			slightly above	ANTHEPEDI	3
			strongly above	ANTHEBENEX	4
16. (+)	**16. (*)**	**VG**	**Inflorescence: number of spathes**		
QL		**(b)**	one	ANTHBNZL	1
G			two	KURIN HEART	2

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
17. (+)	**17. (*)**	**MG/MS /VG**	**Spathe: length**		
QN		**(b)**	very short		1
			very short to short		2
			short	ANTHEBENEX	3
			short to medium		4
			medium	ANTHEPEDI	5
			medium to long		6
			long	ANTHARYSIA	7
			long to very long		8
G			very long		9
18. (+)	**18. (*)**	**MG/MS /VG**	**Spathe: width**		
QN		**(b)**	very narrow		1
			very narrow to narrow		2
			narrow	ANTHDUBAQ	3
			narrow to medium		4
			medium	ANTHEPEDI	5
			medium to broad		6
			broad	ANTHAQUIRE	7
			broad to very broad		8
			very broad		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
19. (+)	**19.**	**MS/VG**	**Spathe: ratio length/width**		
QN		**(b)**	very low		1
			very low to low		2
			low	ANTHCAPBUK	3
			low to medium		4
			medium	ANTHAQUIRE	5
			medium to high		6
			high		7
			high to very high		8
			very high	ANTHDOSDOH	9
20. (+)	**20. (*)**	**VG**	**Spathe: position at broadest part**		
QN		**(b)**	at base	ANTHBNZL	1
			between base and middle	ANTHOLYL	2
			at middle	ANTHITOXO	3
21. (+)	**21. (*)**	**VG**	**Spathe: size of lobes**		
QN		**(b)**	absent or very small	ANTHDOSDOH	1
			very small to small		2
			small	ANTHZUPAP	3
			small to medium		4
			medium	ANTHOLYL	5
			medium to large		6
			large	ANTHAHOTO	7
			large to very large		8
			very large		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
22. (+)	**22.**	**VG**	**Spathe: relative position of lobes at base**		
PQ		**(b)**	incurved but not touching		1
			free		2
			touching		3
			overlapping		4
			adpressed		5
23. (+)	**23.**	**VG**	**Spathe: shape of apex**		
PQ		**(b)**	acute		1
			obtuse		2
			rounded		3
24. (+)	**24. (*)**	**VG**	**Spathe: differentiated tip**		
PQ		**(b)**	absent		1
			narrow acuminate		2
			medium acuminate		3
			broad acuminate		4
25.	**25. (*)**	**VG**	**Spathe: main colour of <u>upper</u> side**		
PQ G		**(b), (c)**	RHS Colour Chart (indicate reference number)		
26.	**26. (*)**	**VG**	**Spathe: secondary colour of <u>upper</u> side**		
PQ G		**(b), (c)**	RHS Colour Chart (indicate reference number)		

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
27. (+)	**27. (*)**	**VG**	**Spathe: distribution of secondary colour of <u>upper</u> side**		
PQ		**(b), (c)**	none		1
			at basal zone		2
			at central zone		3
			at apex		4
			at marginal zone		5
			along veins		6
			at apex and along veins		7
G			throughout		8
28. (+)	**28. (*)**	**VG**	**Spathe: pattern of secondary colour of <u>upper</u> side**		
PQ			solid	ANTHIUFEN	1
			flushed		2
			spotted		3
			irregular		4
29.	**29.**	**VG**	**Spathe: main colour of <u>lower</u> side**		
PQ		**(b), (c)**	RHS Colour Chart (indicate reference number)		
30.	**30.**	**VG**	**Spathe: glossiness on upper side**		
QN		**(b)**	absent or very weak	ARINOS	1
			very weak to weak		2
			weak	KURIN HEART	3
			weak to medium		4
			medium	ANTHARYSIA	5
			medium to strong		6
			strong	ANTHBNZL	7
			strong to very strong		8
			very strong		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
31.	**31. (*)**	**VG**	**Spathe: blistering**		
QN		**(b)**	absent or very weak	ANTHDOSDOH	1
			very weak to weak		2
			weak	ANTHCAPBUK	3
			weak to medium		4
			medium	ANTHEPEDI	5
			medium to strong		6
			strong	ANTHBNZL	7
			strong to very strong		8
			very strong		9
32. (+)	**32.**	**VG**	**Spathe: shape in cross-section of middle zone**		
QN		**(b)**	concave		1
			flat		2
			convex		3
33. (+)	**33.**	**VG**	**Spathe: angle of distal part to peduncle**		
QN		**(b)**	acute		1
			right angle		2
			obtuse		3

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
34. (+)	**34. (*)**	**MG/MS /VG**	**Spadix: length**		
QN		**(b)**	very short		1
			very short to short		2
			short	ANTHEPEDI	3
			short to medium		4
			medium	ANTHBNZL	5
			medium to long		6
			long	ANTHAQUIRE	7
			long to very long		8
			very long		9
35. (+)	**35.**	**MG/MS /VG**	**Spadix: thickness**		
QN		**(b)**	very thin		1
			very thin to thin		2
			thin	RYN2009006	3
			thin to medium		4
			medium	ANTHBNZL	5
			medium to thick		6
			thick	ANTHIOWIR	7
			thick to very thick		8
			very thick		9
36. (+)	**36. (*)**	**VG**	**Spadix: rolling**		
QL		**(b)**	absent	ANTHBNZL	1
G			present	ARINOS	9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
37. (+)	**37. (*)**	**VG**	**<u>Only varieties with Spadix: rolling: absent:</u> Spadix: curvature of longitudinal axis**		
QN		**(b)**	strongly incurved		1
			weakly incurved		2
			straight		3
			weakly recurved		4
			strongly recurved		5
38. (+)	**38.**	**VG**	**Spadix: tapering towards the tip**		
QN		**(b)**	absent or very weak		1
			weak		2
			medium		3
			strong		4
			very strong		5
39. (+)	**39. (*)**	**VG**	**Spadix: main colour of <u>basal</u> part**		
PQ		**(b), (c)**	whitish		1
			green		2
			yellow		3
			orange		4
			pink		5
			red		6
			red purple		7
			purple		8
G			brown		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
40. (+)	**40.**	**VG**	**Spadix: main colour of <u>middle</u> part**		
PQ		**(b), (c)**	whitish		1
			green		2
			yellow		3
			orange		4
			pink		5
			red		6
			red purple		7
			purple		8
			brown		9
41. (+)	**41. (*)**	**VG**	**Spadix: main colour of <u>distal</u> part**		
PQ		**(b), (c)**	whitish		1
			green		2
			yellow		3
			orange		4
			pink		5
			red		6
			red purple		7
			purple		8
G			brown		9

CPVO N°	UPOV N°	Stage, Method	Characteristics	Examples	Note
42. (+)	**42.**	**VG**	**Spadix: main colour of <u>basal</u> part after dehiscence of anthers**		
PQ		**(c)**	whitish		1
			green		2
			yellow		3
			orange		4
			pink		5
			red		6
			red purple		7
			purple		8
			brown		9
43. (+)	**43.**	**VG**	**Spadix: main colour of <u>distal</u> part after dehiscence of anthers**		
PQ		**(c)**	whitish		1
			green		2
			yellow		3
			orange		4
			pink		5
			red		6
			red purple		7
			purple		8
			brown		9

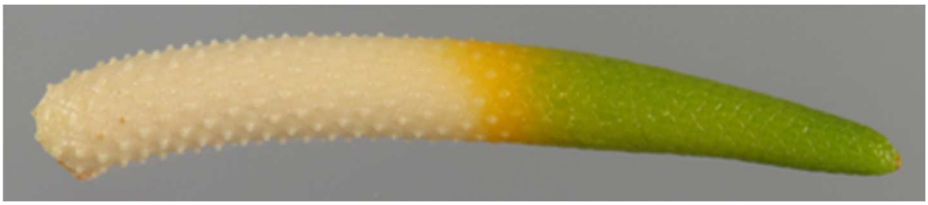
8. EXPLANATIONS ON THE TABLE OF CHARACTERISTICS

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) Observations should be made on the largest fully developed leaf.

b) Observations should be made when the basal 1/3 to 2/3 if the flowers spadix are developed and feel rough.

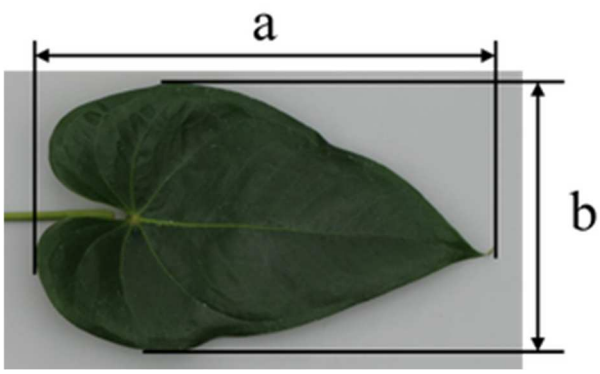


c) The main colour is the colour with the largest surface area, the secondary colour is the colour with the second largest surface area, and the tertiary colour is the colour with the third largest surface area. In cases where the area of the main and secondary colour are too similar to reliably decide which colour has the largest area, the darker colour is considered to be the main colour. In cases where the area of the secondary and tertiary colour are too similar to reliably decide which colour has the second largest area, the darker colour is considered to be the secondary colour.

8.2 Explanations for individual characteristics

Ad. 1: Plant: height

Ad. 2: Leaf blade: length
Ad. 3: Leaf blade: width



a = Leaf blade: length
b = Leaf blade: width

Ad. 4: Leaf blade: ratio length/width

3
low

5
medium

7
high

Ad. 5: Leaf blade: size of lobes

Observations should be made relative to the full size of the leaf blade.

1
absent or very small

3
small

5
medium

7
large

Ad. 6: Leaf blade: relative position of lobes at base

1
incurved but not touching

2
free

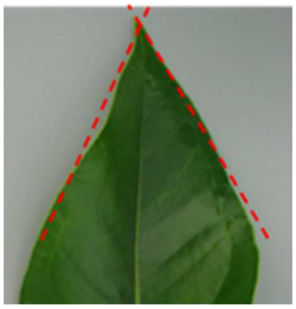
3
touching

4
overlapping

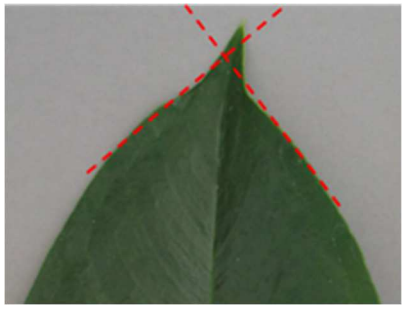
5
adpressed

Ad. 7: Leaf blade: angle of apex

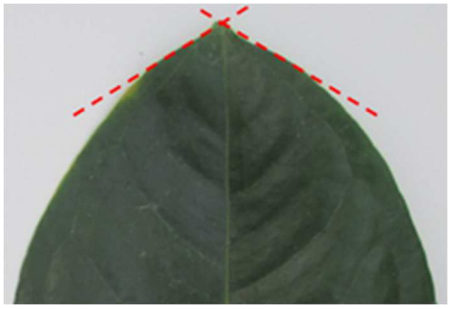
The general shape of the apex should be observed.
If present, the tip should be excluded from observation.



1
acute

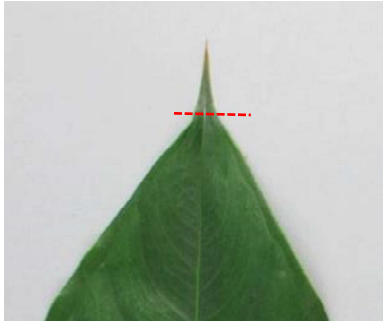


2
approximately right angle

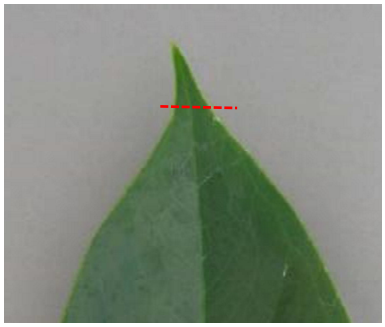


3
obtuse

Ad. 8: Leaf blade: differentiated tip



2
narrow acuminate



3
medium acuminate

4
broad acuminate

Ad. 13: Peduncle: thickness

Observations should be made at the middle of the peduncle.

Ad. 15: Inflorescence: position in relation to foliage

2
same level

3
slightly above

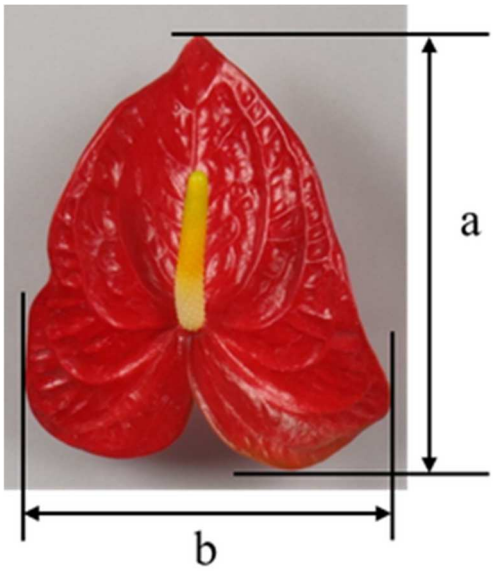
4
strongly above

Ad. 16: Inflorescence: number of spathes

1
one

2
two

Ad. 17: Spathe: length
Ad. 18: Spathe: width



a = Spathe: length
b = Spathe: width

Ad. 19: Spathe: ratio length/width

3
low

5
medium

7
high

Ad. 20: Spathe: position of broadest part

1
at base

2
between base and middle

3
at middle

Ad. 21: Spathe: size of lobes

Observations should be made relative to the full size of the spathe.

1
absent or very small

3
small

5
medium

7
large

Ad. 22: Spathe: relative position of lobes at base

See Ad. 6.

Ad. 23: Spathe: shape of apex

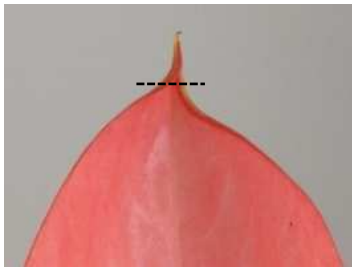
If present, the tip should be excluded from observation.

1
acute

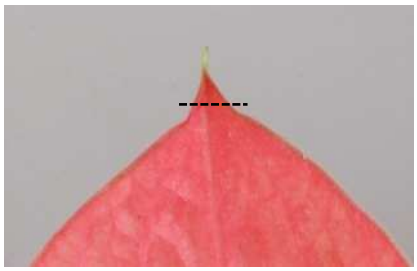
2
obtuse

3
rounded

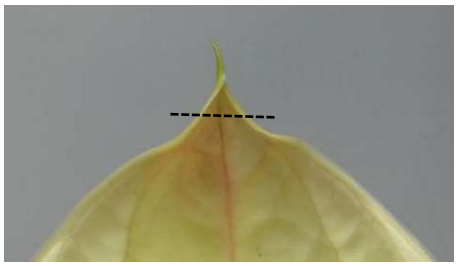
Ad. 24: Spathe: differentiated tip



2
narrow acuminate

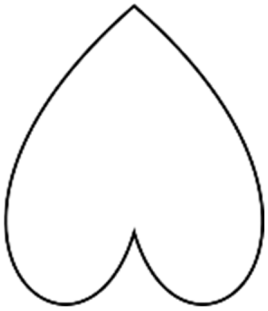


3
medium acuminate

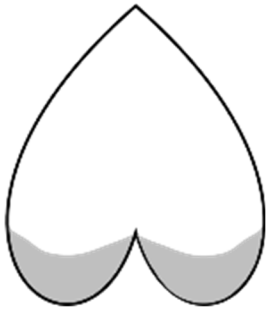


4
broad acuminate

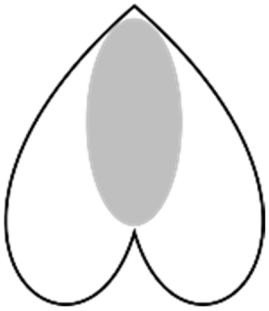
Ad. 27: Spathe: distribution of secondary colour of upper side



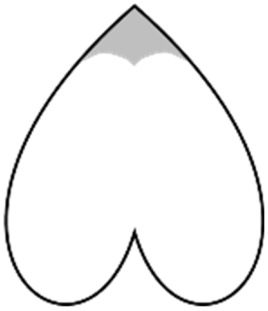
1
none



2
at basal zone

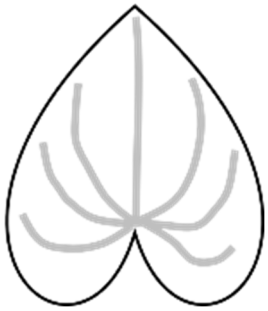


3
at central zone

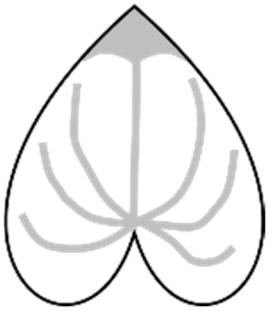


4
at apex

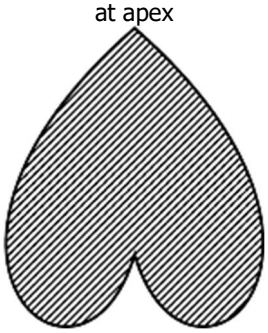
5
at marginal zone



6
along veins

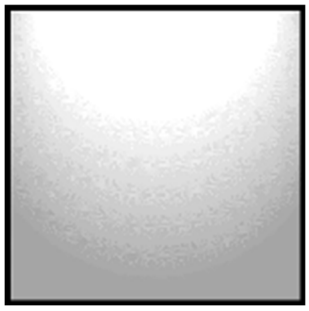


7
at apex and along veins

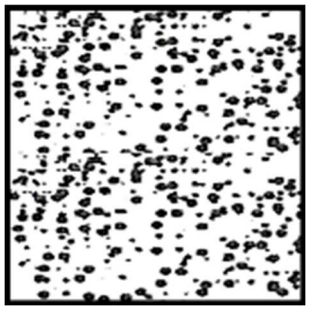


8
throughout

Ad. 28: Spathe: pattern of secondary colour of upper side



2
flushed



3
spotted

4
irregular

Ad. 32: Spathe: shape in cross-section of middle zone

1
concave

2
flat

3
convex

Ad. 33: Spathe: angle of distal part to peduncle

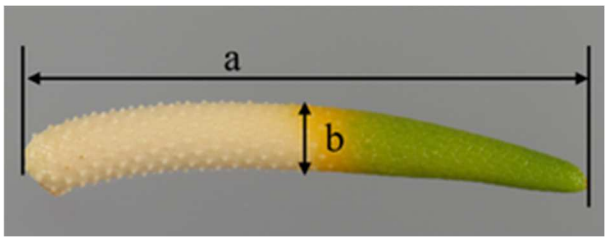
1
acute

2
right angle

3
obtuse

Ad. 34: Spadix: length
Ad. 35: Spadix: thickness

Observations should be made at the middle of the spadix.



a = length
b = thickness

Ad. 36: Spadix: rolling

1
absent

9
present

Ad. 37: Only varieties with Spadix: rolling: absent: Spadix: curvature of longitudinal axis

1
strongly incurved

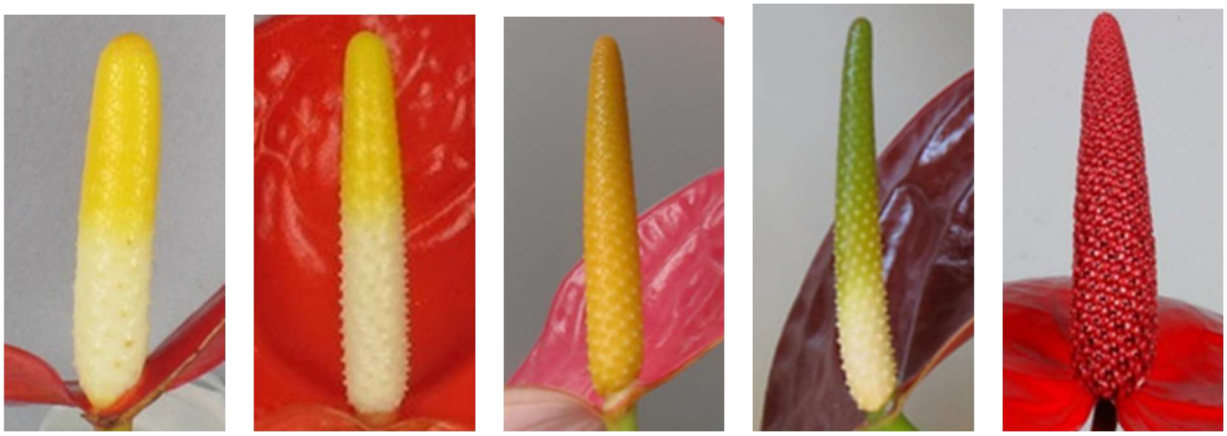
2
weakly incurved

3
straight

4
weakly recurved

5
strongly recurved

Ad. 38: Spadix: tapering towards the tip



1
absent or very weak

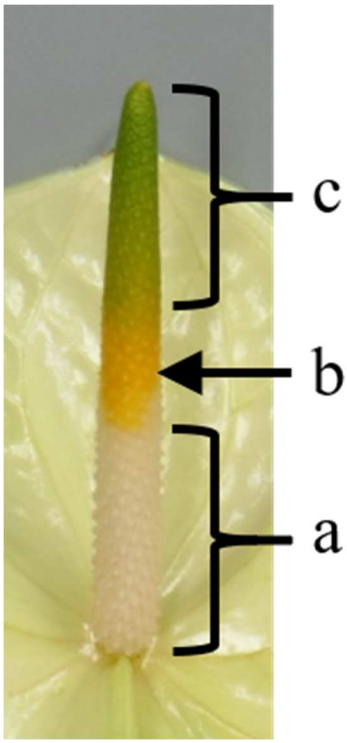
2
weak

3
medium

4
strong

5
very strong

Ad. 39: Spadix: main colour of basal part
Ad. 40: Spadix: main colour of middle part
Ad. 41: Spadix: main colour of distal part

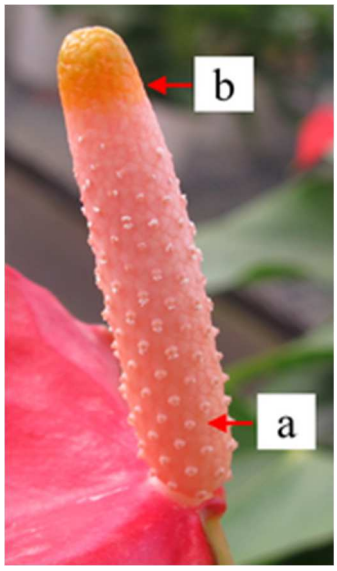


a = main colour of basal part (char. 39)

b = main colour of middle part (char. 40)

c = main colour of distal part (char. 41)

Ad. 42: Spadix: main colour of basal part after dehiscence of anthers
Ad. 43: Spadix: main colour of distal part after dehiscence of anthers



Observations should be made when one to two thirds of anthers in the basal part of the spadix have dehisced. Some modern varieties don't show these signs at all. In those cases, observation should be made when the flowers at the top of spadix are developed and feel rough.

a = Spadix: main colour of basal part after dehiscence of anthers (char. 42)

b = Spadix: main colour of distal part after dehiscence of anthers (char. 43)

9. LITERATURE

Tsukamoto, Y., 1994: The Grand Dictionary of Horticulture (Volume 1), Shogakukan Inc., Chiyoda-ku, Tokyo, JP, pp. 187-192

Brickel, C., 2003: A to Z Encyclopedia of Garden Plants, Seibundo Shinkosha Publishing Co. Ltd., Bunkyo-ku, Tokyo, JP, pp. 123, translated by Yokoi M et al.

10. TECHNICAL QUESTIONNAIRE

The Technical Questionnaire is available on the CPVO website under the following reference:
CPVO/TQ-086/2 – *Anthurium* Schott – anthurium

Link to the e-TQ:
https://online.plantvarieties.eu/backOfficeFormQuestions?viewFormId=15196&viewFormType=TQ&viewFormLang=EN&speciesName=anthur&status=1,2&order=formName