



**European Union**  
Community Plant Variety Office

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

*Schlumbergera* Lem. (including *Zygocactus* K. Schum.)

**SCHLUMBERGERA**

**UPOV Species Code: SCHLU**

**Adopted on 6<sup>th</sup> November 2003**

## **I - SUBJECT OF THE PROTOCOL**

The protocol describes the technical procedures to be followed in order to meet the Council Regulation 2100/94 on Community Plant Variety Rights. The technical procedures have been agreed by the Administrative Council and are based on general UPOV Document TG/1/3 and UPOV Guideline TG/177/3 dated 7<sup>th</sup> October 1987 for the conduct of tests for Distinctness, Uniformity and Stability. This protocol applies to all vegetatively propagated varieties of *Schlumbergera Lem.* (including *Zygocactus K. Schum.*).

## **II - SUBMISSION OF PLANT MATERIAL**

1. The Community Plant Variety Office (CPVO) is responsible for informing the applicant of

- the closing date for the receipt of plant material;
- the minimum amount and quality of plant material required;
- the examination office to which material is to be sent.

The applicant is responsible for ensuring compliance with any customs and plant health requirements.

2. Closing dates of application and material requirements by the Examination Office

The final dates for receipt of requests, technical questionnaires and the final date or submission period for plant material will be decided by the CPVO and each Examination Office chosen.

The Examination Office is responsible for immediately acknowledging the receipt of requests for testing, and technical questionnaires. If no or unsatisfactory plant material is submitted the CPVO should be informed as soon as possible.

3. Plant material requirements

Information with respect to closing dates and submission requirements of plant material for technical examination of varieties can be found on the CPVO website ([www.cpvo.europa.eu](http://www.cpvo.europa.eu)) and in the special Issue S2 of the Official Gazette of the Office published yearly at the month of September.

Quality: ..... The plant material supplied should be visibly healthy, not lacking in vigour or affected by any important pest or disease, especially virus.

The plant material must not have undergone any treatment unless the CPVO and the examination office allow or request such treatment. If it has been treated, full details of the treatment must be given.

Labelling of sample:..... - Species  
- File number of the application allocated by the CPVO  
- Breeder's reference  
- Examination reference (if known)  
- Name of applicant  
- The phrase "On request of the CPVO"

### **III - CONDUCT OF TESTS**

#### 1. Variety collection

A variety collection will be maintained for the purpose of establishing distinctness of the candidate varieties in test. A variety collection may contain both living material and descriptive information. A variety will be included in a reference collection only if plant material is available to make a technical examination.

Pursuant to Article 7 of Council Regulation No. 2100/94, the basis for a collection should be the following:

- varieties listed or protected at the EU level;
- varieties protected in other UPOV Member States;
- any other variety in common knowledge.

It is the responsibility of Examination Office to keep the variety collection up to date.

#### 2. Material to be examined

Candidate varieties will be directly compared with other candidates for Community plant variety rights tested at the same Examination Office, and with appropriate varieties in the variety collection. When necessary an Examination Office may also include other candidates and varieties.

### 3. Characteristics to be used

The characteristics to be used in DUS tests and preparation of descriptions shall be those referred to in Annex 1. 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. In the latter case, the CPVO should be informed. In addition the existence of some other regulation e.g. plant health, may make the observation of the characteristic impossible.

The Administrative Council empowers the President, in accordance with Article 23 of Commission Regulation N° 1239/95, to insert additional characteristics and their expressions in respect of a variety.

### 4. Grouping of varieties

The varieties and candidates to be compared will be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety and which in their various states of expression are fairly evenly distributed throughout the collection. In the case of continuous grouping characteristics overlapping states of expression between adjacent groups is required to reduce the risks of incorrect allocation of candidates to groups. The characters used for grouping are the following:

- a) Corolla lobe: size of macule in relation to size of lobe (characteristic 17)
- b) Corolla lobe: colour of marginal zone (characteristic 23) with the following groups:

Group 1: white

Group 2: yellow

Group 3: pink

Group 4: orange

Group 5: red

Group 6: purple

### 5. Trial designs and growing conditions

The minimum duration of tests will normally be one growing cycle if the results on distinctness and uniformity are conclusive. Tests will be carried out under conditions ensuring normal growth. The size of the plots will be such that plants or parts of plants may be removed for measuring and counting without prejudice to the observations which must be made up to the end of the growing period.

The test design is as follows:

As a minimum, each test should include a total of 10 plants. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

All observations determined by measurement or counting should be made on 10 plants or parts taken from each of 10 plants at the time of flowering. Flowering is defined as opening of the third flower.

Unless otherwise indicated, all observations of the phylloclades should be made on the phylloclades of the 2<sup>nd</sup> order.

All observations on the corolla lobe should be made on the inner side of the inner lobe.

The test should normally be conducted at one place.

The test should be carried out in the greenhouse under the following growing conditions:

Propagation:..... Week 2 in propagation frames.  
Temperature 22°C, ventilation at 24°C.

Potting: ..... Week 12 in 9 cm pot.  
Temperature 20°C, ventilation at 24°C.

Pinching and start of short days (8 hours): Week 33. Phylloclades of 4<sup>th</sup> order should be removed.

Fertilisation:..... Potassium nitrate supplemented with NPK  
13:4:19

Plant density: ..... 30 plants per m<sup>2</sup>.

Shading: ..... In summer, the glasshouse should be shaded.

## 6. Special 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, 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 characters listed in the protocol.

7. Standards for decisions

a) **Distinctness**

A candidate variety will be considered to be distinct if it meets the requirements of Article 7 of Council Regulation No. 2100/94.

b) **Uniformity**

For the assessment of uniformity a population standard of 1% with an acceptance probability of at least 95% should be applied.

For vegetatively propagated varieties, the candidate will be considered to be sufficiently uniform if the number of off-types does not exceed 1 plant.

c) **Stability**

A candidate will be considered to be sufficiently stable when there is no evidence to indicate that it lacks uniformity.

**IV - REPORTING OF RESULTS**

After each growing cycle the results will be summarised and reported to the CPVO in the form of a UPOV model interim report in which any problems will be indicated under the headings distinctness, uniformity and stability. Candidates may meet the DUS standards after one growing cycle but in some cases two or more growing cycles may be required. When tests are completed the results will be sent by the Examination Office to the CPVO in the form of a UPOV model final report.

If it is considered that the candidate complies with the DUS standards, the final report will be accompanied by a variety description in the format recommended by UPOV. If not the reasons for failure and a summary of the test results will be included with the final report.

The CPVO must receive interim reports and final reports by the date agreed between the CPVO and the examination office.

Interim reports and final examination reports shall be signed by the responsible member of the staff of the Examination Office and shall expressly acknowledge the exclusive rights of disposal of CPVO.

## **V - LIAISON WITH THE APPLICANT**

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 agreement, the applicant may be directly informed at the same time as the CPVO particularly if a visit to the trial is advisable.

The interim report and final report shall be sent by the Examination Office to the CPVO.

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## ANNEXES TO FOLLOW

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## ANNEX II

Technical questionnaire



## ANNEX I

### TABLE OF CHARACTERISTICS

CPVO N°	UPOV N°	Characteristics	Examples	Note	
<b>1.</b> (+)	<b>1.</b> (+)	<b>Plant: growth habit</b>	upright	Christmas Charm, Rita	1
			semi-upright	Madisto, Sonja	3
			horizontal	Madurna	5
			pendulous		7
			strongly pendulous		9
<b>2.</b> (+)	<b>2.</b> (+)	<b>Plant: number of phylloclades of 3<sup>rd</sup> order</b>	few	Madurna	3
			medium	Madisto, Sonja	5
			many	Laterne, Nicole	7
<b>3.</b>	<b>3.</b>	<b>Phylloclade: length</b>	short	Madisto	3
			medium	Nicole	5
			long	Rita	7
<b>4.</b>	<b>4.</b>	<b>Phylloclade: maximum width</b>	narrow	Schlumbergera russeliana (Hook.) Britt et Rose	3
			medium	Sonja	5
			broad	Madisto	7
<b>5.</b>	<b>5.</b>	<b>Phylloclade: colour</b>	light green	Christmas Charm	3
			medium green	Madisto, Rita	5
			dark green	Sonja	7
<b>6.</b>	<b>6.</b>	<b>Phylloclade: type of incision of margin</b>	crenate		1
			serrate		2
			dentate		3

CPVO N°	UPOV N°	Characteristics	Examples	Note	
7.	7.	<b>Phylloclade: depth of incision of margin</b>	very shallow		1
			shallow	Christmas Charm	3
			medium	Madisto	5
			deep	Marie	7
			very deep		9
8.	8.	<b>Phylloclade: curvature in cross section</b>	absent or very weak		1
			weak	Madisto	3
			medium	Laterne	5
			strong	Sonja	7
			very strong		9
9.	9.	<b>Phylloclade: undulation of margin</b>	absent or very weak	Nicole	1
			weak	Schlumbergera russeliana (Hook.) Britt et Rose	3
			medium	Laterne	5
			strong	New Norris	7
			very strong		9
10.	10.	<b>Bud: colour of tip of 1.0 cm long bud</b>	green	Tina	1
			yellow	Rita	2
			pink	Dorthe	3
			orange	Sonja	4
			red	Peach Parfait	5
			purple	Nicole	6

CPVO N°	UPOV N°	Characteristics	Examples	Note	
11.	11.	<b>Bud: intensity of colour of 1.0 cm long bud</b>	light	3	
			medium	5	
			dark	7	
12.	12.	<b>Bud: shape of tip of 1.5 cm long bud</b>	acute	New Norris	1
			obtuse	Madurna, Sonja	2
			round	Madisto, Rita	3
13. (+)	13. (+)	<b>Flower: width</b>	narrow	Madivo, Sonja	3
			medium	Nicole, Rita	5
			broad	Ilona	7
14. (+)	14. (+)	<b>Flower: length</b>	short	Nicole, Sonja	3
			medium	Marie, Rita	5
			long	Ilona	7
15. (+)	15. (+)	<b>Flower: limb (at full opening)</b>	flat	Christmas Charm	3
			reflexed	Madurna, Nicole	5
			strongly reflexed	Marie, Tina	7
16. (+)	16. (+)	<b>Corolla lobe: width</b>	narrow	Tina	3
			medium	Sonja	5
			broad	Madurna	7

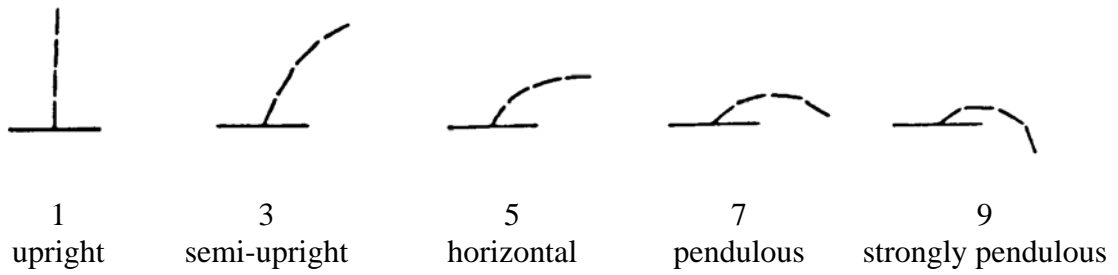
CPVO N°	UPOV N°	Characteristics	Examples	Note	
17. (+)	17. (+)	<b>Corolla lobe: size of macule in relation to size of lobe</b>	absent or very small	Dorthe	1
			small	Madurna, Marie	3
			medium	Peach Parfait	5
			large	Rita	7
			very large		9
18. (+)	18. (+)	<b>Corolla lobe: colour of macule</b>	RHS Colour Chart (indicate reference number) .....		
19. (+)	19. (+)	<b>Corolla lobe: middle zone</b>	absent	Sonja	1
			present	Nicole	9
20. (+)	20. (+)	<b>Corolla lobe: colour of middle zone</b>	white		1
			yellow		2
			pink		3
			red		4
			purple		5
21. (+)	21. (+)	<b>Corolla lobe: border between zones</b>	diffuse		1
			sharp		2
22. (+)	22. (+)	<b>Corolla lobe: size of marginal zone</b>	small	Marie	3
			medium	Sonja	5
			large	New Norris	7

CPVO N°	UPOV N°	Characteristics	Examples	Note
23. (+)	23. (+)	<b>Corolla lobe: colour of marginal zone</b>	RHS Colour Chart (indicate reference number) .....	
24. (+)	24. (+)	<b>Corolla tube: shape of mouth</b>	elliptic broad elliptic circular	1 2 3
25. (+)	25. (+)	<b>Corolla tube: coloured ring at the mouth</b>	absent present	Christmas charm Rita, Sonja 1 9
26. (+)	26. (+)	<b>Corolla tube: width of coloured ring at the mouth</b>	narrow medium broad	Dark Sonja Nicole, Sonja Rita, Tina 3 5 7
27. (+)	27. (+)	<b>Stamen: length beyond the mouth</b>	short medium long	Rita, Tina Marie, Sonja Madivo 3 5 7
28. (+)	28. (+)	<b>Stamen: colour of filament</b>	white yellow pink red purple	Marie, Rita New Norris Madisto Christmas Magic Red Radiance 1 2 3 4 5
29. (+)	29. (+)	<b>Pistil: length beyond the mouth</b>	short medium long	New Norris Rita Marie, Nicole 3 5 7

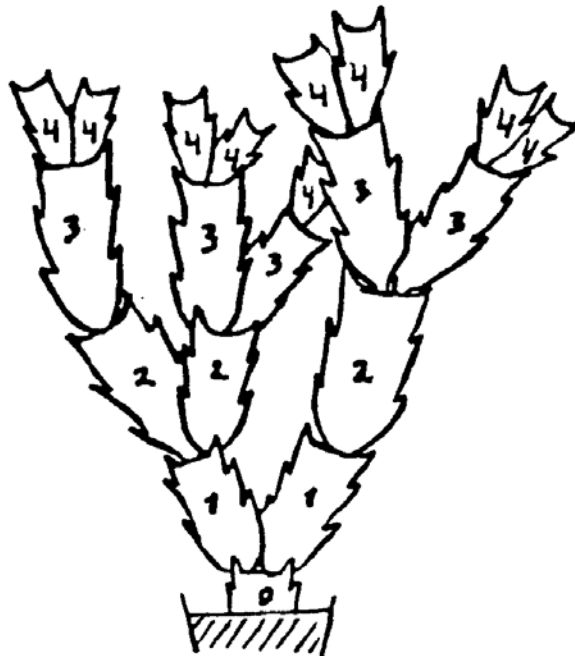
CPVO N°	UPOV N°	Characteristics	Examples	Note	
30. (+)	30. (+)	<b>Stigma: colour</b>	white		1
			yellow		2
			pink	Christmas Charm	3
			red	Red Radiance	4
			brown		5
			purple	Sonja	6
31. (+)	31. (+)	<b>Ovary: colour</b>	green		1
			reddish green		2
			greenish red		3
			red		4
			reddish purple		5
32.	32.	<b>Time of beginning of flowering</b>	early		3
			medium	Dark Sonja	5
			late	Maditro	7
33.	33.	<b>Duration of flowering</b>	short	Madisto	3
			medium	Madivo	5
			long	Sonja	7

## EXPLANATIONS ON THE TABLE OF CHARACTERISTICS

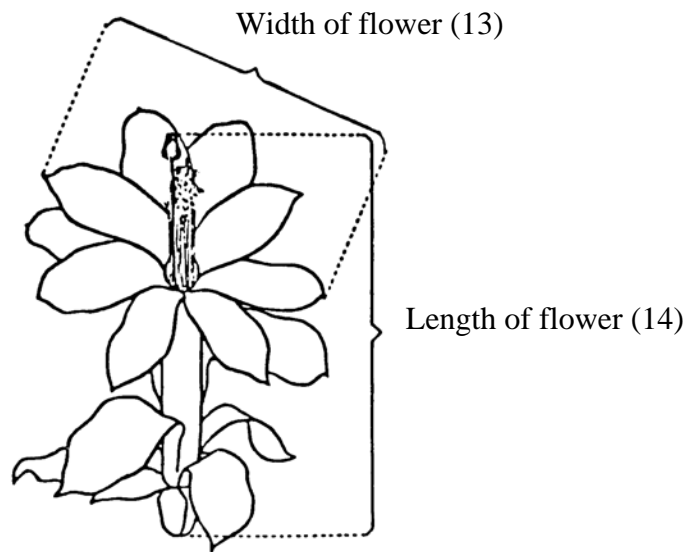
Ad 1: Plant: growth habit



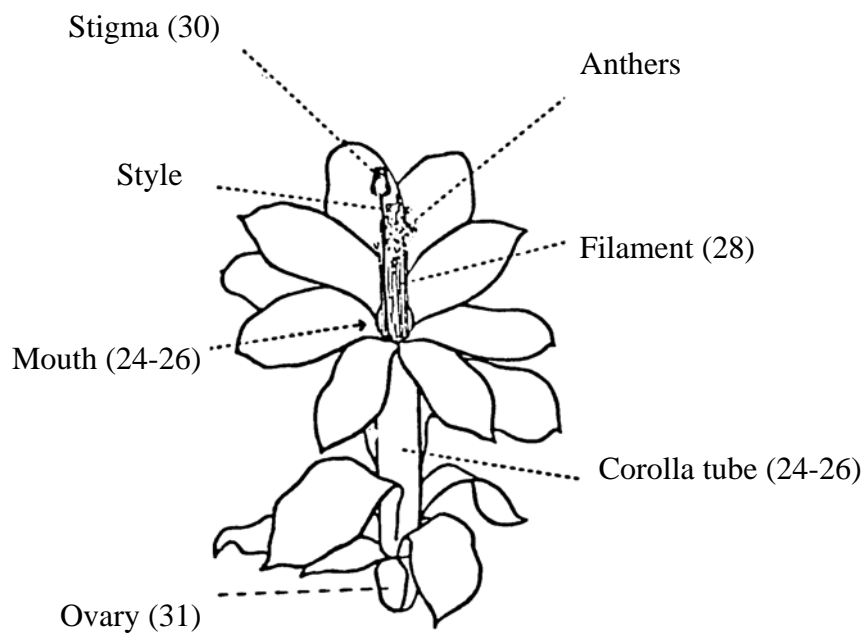
Ad 2: Order of phylloclades



Ad 13+14: flower: width (13) and length (14)



Ad 16-31 Organs of the flower





Ad 15: Flower: limb (at full opening)



3  
flat

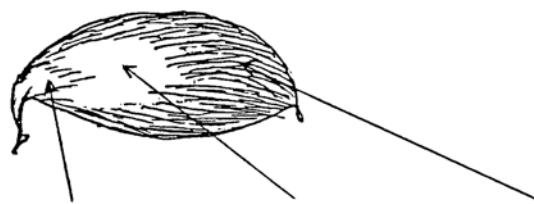


5  
reflexed



7  
strongly reflexed

Ad 17-23: Corolla lobe : macule, middle zone, marginal zone



macule

middle zone

marginal zone

## **LITERATURE**

Hegi, G., 1975: "Illustrierte Flora von Mitteleuropa", Band V, Teil 2, S. 695, Verlag Paul Parey, Berlin und Hamburg, DE

## ANNEX II



**European Union**  
Community Plant Variety Office

### TECHNICAL QUESTIONNAIRE

to be completed in connection with an application for Community Plant Variety Rights  
Please answer all questions. A question without any answer will lead to a non-attribution  
of an application date. In cases where a field / question is not applicable, please state so.

- 1. Botanical taxon: Name of the genus, species or sub-species to which the variety belongs and common name:**

*Schlumbergera* Lem. Including *Zygocactus* K. Schum.

**CHRISTMAS CACTUS**

Species (indicate) .....

- 2. Applicant(s): Name(s) and address(es), phone and fax number(s), e-mail address, and where appropriate name and address of the procedural representative**

.....

.....

- 3. Variety denomination**

a) Where appropriate proposal for a variety denomination:

.....

b) Provisional designation (breeder's reference):

.....

**4. Information on origin, maintenance and reproduction of the variety**

**4.1 Origin**

(a) Seedling (indicate parent varieties) ..... [ ]

.....  
.....  
.....  
.....

(b) Mutation (indicate parent variety) ..... [ ]

.....  
.....  
.....  
.....

(c) Discovery (indicate where, when and how the variety has been developed): ..... [ ]

.....  
.....  
.....  
.....

(d) Other (please specify) ..... [ ]

.....  
.....  
.....  
.....

**4.2 Method of propagation**

(a) Cuttings ..... [ ]

(b) *In vitro* propagation ..... [ ]

(c) Other (please specify): ..... [ ]

.....  
.....  
.....  
.....  
.....  
.....

**4.3 Geographical origin of the variety:** the region and the country in which the variety was bred or discovered and developed.

.....

**5. Characteristics of the variety to be indicated:** (the number in brackets refers to the corresponding characteristic in the CPVO Technical Protocol; please mark the state of expression which best corresponds).

Characteristics		Example varieties	Note
<b>5.1</b> <b>(17)</b>	<b>Corolla lobe: size of macule in relation to size of lobe</b>		
	absent or very small	Dorthe	1 [ ]
	small	Madurna, Marie	3 [ ]
	medium	Peach Parfait	5 [ ]
	large	Rita	7 [ ]
	very large		9 [ ]
<b>Please fill in point (i) if possible, otherwise point (ii)</b>			
<b>5.2</b> <b>(23)</b>	<b>(i) Corolla lobe: colour of marginal zone (on inner side of inner lobes)</b>		
	RHS Colour Chart (indicate reference number)		
<b>5.2 (ii)</b>	<b>Corolla lobe: colour of marginal zone (on inner side of inner lobes)</b>		
	white		1 [ ]
	yellow		2 [ ]
	pink		3 [ ]
	orange		4 [ ]
	red		5 [ ]
	purple		6 [ ]
	Other colour (indicate) .....		7 [ ]

Characteristics	Example varieties	Note	
<b>5.3</b> (32) <b>Time of beginning of flowering (opening of third flower)</b>	early	3 [ ]	
	medium	5 [ ]	
	late	7 [ ]	
<b>6. Similar varieties and differences from these varieties:</b>			
Denomination of similar variety	Characteristic in which the similar variety is different <sup>1)</sup>	State of expression of similar variety	State of expression of candidate variety
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
<sup>1)</sup> <b>In the case of identical states of expressions of both varieties, please indicate the size of the difference</b>			
<b>7. Additional information which may help to distinguish the variety</b>			
A representative printed-out colour photo of the variety <b>must</b> be added to the technical questionnaire.			
<b>7.1 Resistance to pests and diseases</b>			
.....			
.....			
.....			
.....			
.....			
<b>7.2 Special conditions for the examination of the variety</b>			
[ ] YES, please specify .....			
[ ] NO			
<b>7.3 Other information</b>			
[ ] YES, please specify .....			
[ ] NO			

**8. GMO-information required**

The variety represents a Genetically Modified Organism within the meaning of Article 2(2) of Council Directive 2001/18/EC of 12/03/2001.

YES  NO

If yes, please add a copy of the written attestation of the responsible authorities stating that a technical examination of the variety under Articles 55 and 56 of the Basic Regulation does not pose risks to the environment according to the norms of the above-mentioned Directive.

**9. Information on plant material to be examined**

**9.1** The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

**9.2** The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

- |   |                              |                             |
|---|------------------------------|-----------------------------|
| (a) Microorganisms (e.g. virus, bacteria, phytoplasma)      | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (b) Chemical treatment (e.g. growth retardant or pesticide) | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (c) Tissue culture  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| (d) Other factors   | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

Please provide details of where you have indicated "Yes":

.....  
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.....  
.....

**I/We hereby declare that to the best of my/our knowledge the information given in this form is complete and correct.**

Date

Signature

Name

[End of document]