

### PROTOCOL FOR DISTINCTNESS, UNIFORMITY AND STABILITY TESTS

Cichorium endivia L.

**ENDIVE** 

UPOV Species Code: CICHO\_END

Adopted on 01/12/2005

#### 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/118/4 dated 09/04/2003 for the conduct of tests for Distinctness, Uniformity and Stability. This protocol applies to varieties of *Cichorium endivia* L.

#### II SUBMISSION OF SEED AND OTHER 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.

A sub-sample of the material submitted for test will be held in the variety collection as the definitive sample of the candidate variety.

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

#### 2. Final dates for receipt of documentation and material 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. Immediately after the closing date for the receipt of plant material the Examination Office should inform the CPVO whether acceptable plant material has been received or not. However if unsatisfactory plant material is submitted the CPVO should be informed as soon as possible.

#### 3. Plant material requirements

The final dates for request for technical examination and sending of technical questionnaire as well as submission date of plant material by the applicant, and quantity of plant material to be supplied by the applicant are published on the CPVO website, <a href="https://www.cpvo.europa.eu">www.cpvo.europa.eu</a>, and in the S2 official gazette.

Quality of seed: Should not be less than the standards laid down for certified

seed in Annex 2 of EC Directive 2002/55/EC.

Seed Treatment: 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.

Special requirements: -

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"

- In the case of a split sample, the quantity of seed being

submitted.

#### III CONDUCT OF TESTS

#### 1. <u>Variety collection</u>

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 variety 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 or at least in one of the EEA Member States:
- varieties protected in other UPOV Member States;
- any other variety in common knowledge.

The composition of the variety collection in each Examination Office depends on the environmental conditions in which the Examination Office is located.

Variety collections will be held under conditions which ensure the long term maintenance of each accession. It is the responsibility of Examination Offices to replace reference material which has deteriorated or become depleted. Replacement material can only be introduced if appropriate tests confirm conformity with the existing reference material. If any difficulties arise for the replacement of reference material Examination Offices must inform the CPVO. If authentic plant material of a variety cannot be supplied to an Examination Office the variety will be removed from the variety collection.

#### 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. Examination Offices should therefore make efforts to co-ordinate the work with other Offices involved in DUS testing of endive. There should be at least an exchange of technical questionnaires for each candidate variety, and during the test period, Examination Offices should notify each other and the CPVO of candidate varieties which are likely to present problems in establishing distinctness. In order to solve particular problems Examination Offices may exchange plant material.

#### 3. Characteristics to be used

The characteristics to be used in DUS tests and preparation of descriptions shall be those referred to in the 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  $N^{\circ}$  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 characteristics used for grouping are the following:

- a) Plant: botanical type (characteristic 1)
- b) Plain type varieties only: Plant: sub-type (characteristic 2)
- c) Cut type varieties only: Plant: sub-type (characteristic 3)
- d) Heart: shape in longitudinal section (characteristic 6)
- e) Flower: colour (characteristic 26)
- f) Time of bolting (characteristic 28)

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#### 5. <u>Trial designs and growing conditions</u>

The minimum duration of tests will normally be two independent growing cycles. 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 60 plants which should be divided between two or more replicates.

All observations determined by measurement or counting should be made on 20 plants or parts of 20 plants.

#### The time of observation:

- (i) plant: all observation on the plant should be made just before harvest maturity;
- (ii) leaf: all observation on the leaf should be made just before harvest maturity on leaves excluding the outer and centre leaves;
- (iii) stem: all observation on the stem should be made on a flowering stem.

#### 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

A candidate will be considered to be sufficiently uniform if the number of off-types does not exceed the number of plants as indicated in the table below. A population standard of 2% and an acceptance probability of 95% should be applied.

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Table of maximum numbers of off-types allowed for uniformity standards.

Number of plants	off-types allowed	
42-69	3	

#### 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 recording season 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 two growing periods but in some cases three growing periods 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 as well as the 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** 

#### Types of expression of characteristics:

QL – Qualitative characteristic

QN – Quantitative characteristic

PQ – Pseudo-qualitative characteristic

#### Type of 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

When a method of observation is attributed to a certain characteristic, the first differentiation is made depending if the action taken is a visual observation (V) or a measurement (M).

The second differentiation deals with the number of observations the expert attributes to each variety, thus the attribution of either G or S.

If a single observation of a group consisting of an undefined number of individual plants is appropriate to assess the expression of a variety, we talk about a visual observation or a measurement made on a group of plants, thus we attribute the letter G (either VG or MG). If the expert makes more than one observation on that group of plants, the decisive part is that we have at the end <u>only one data entry per variety</u> which means that we have to deal with G (e.g. measurement of plant length on a plot – MG, visual observation of green colour of leaves on a plot – VG).

If it is necessary to observe a number of individual plants to assess the expression of a variety, we should attribute the letter S (thus either VS or MS). Single plant data entries are kept per variety for further calculations like the variety mean (e.g. measurement of length of ears – MS, visual observation of growth habit of single plants in grasses – VS). The number of individual plants to be observed in such cases is stated in section III.5.

## **ANNEX I**

# TABLE OF CHARACTERISTICS TO BE USED IN DUS-TEST AND PREPARATION OF DESCRIPTIONS

CPVO No.	UPOV No	Characteristics Examples		Note
1. (+)	1. (+)	Plant: botanical type		
QN		plain type	Cichorium endivia var. latifolia	1
VG		intermediate type		2
G		cut type	Cichorium endivia var. crispa	3
2.	2.	Plain type varieties only: Plant: sub-type		
(+)	(+)	Grosse bouclée		1
QL		Á cœur plein		2
VG		Géante maraîchère		3
G		Cornet		4
3.	3.	Non-plain type varieties only: Plant: sub-type		
(+)	(+)	Wallonne		1
QL		Louviers		2
VG		D'été à cœur jaune		3
G		other types (including intermediate types between cut and plain types)		4
4.	4.	Plant: diameter		
QN		small	Batavia Améliorée, De Louviers	3
VG		medium	Blonde à cœur plein, D'été à cœur jaune, Golda	5
		large	Grosse Pancalière	7
		very large	Super Fiorentina, Wallonne	9

CPVO No.	UPOV No	Characteristics	Examples	Note
5.	5.	Plant: growth habit		
QN		erect Cornet de la Loire, Gloire de l'Exposition		1
VG		semi-erect Blonde à cœur plein, D'été à cœur jaune		3
		horizontal	Argentée Mirabel, De Ruffec	5
<b>6.</b> (+)	<b>6.</b> (+)	Heart: shape in longitudinal section		
PQ		elliptic	Cornet de la Loire	1
VG		transverse broad elliptic	D'été à cœur jaune	2
G		transverse narrow elliptic	Argentée Mirabel, De Louviers, Golda	3
7.	7.	Heart: colour		
PQ		yellowish green	Blonde à coeur plein, Toujours Blanche	1
VG		green	Reine d'Hiver	
8.	8.	Heart: intensity of green colour		
QN		light	De Ruffec, Reine d'Hiver	3
VG		medium	Wallonne	5
		dark		7
9.	9.	Leaf: attitude		
QN		erect	Cornet de la Loire, Reine d'Hiver	3
VG		semi-erect	De Ruffec, Géante maraîchère	5
		horizontal	D'Hiver de Provence	
10.	10.	Leaf: incurving of distal part		
(+)	(+)	weak	Blonde à cœur plein, D'Hiver de Provence	3
QN		medium	Grosse Pancalière	5
VG		strong	Géante maraîchère, Reine d'Hiver	7

CPVO No.	UPOV No	Characteristics	Examples	Note
11.	11.	Leaf: length		
		short	D'été d'Anjou	3
QN		medium	Batavia Améliorée, D'Hiver de Provence	5
MS/VG		long	Argentée Mirabel, D'été à cœur jaune	7
12.	12.	Leaf: maximum width		
QN		narrow	De Namur, D'Hiver du Var	3
MS/VG		medium	Batavia Améliorée, Grosse Bouclée 2, Wallonne	5
		broad	D'été à cœur jaune, Géante maraîchère	7
13.	13.	Plain type varieties only: Leaf: shape		
QN		narrow obovate	D'Hiver du Var, Escariol grüner	3
VG		obovate	Argentée Mirabel	
		broad obovate Diva, Géante maraîchère		7
14.	14.	Leaf: colour		
PQ		yellowish green	Blonde à cœur plein, Toujours Blanche	
VG		green	Batavia Améliorée, D'été d'Anjou, De Namur	2
		greyish green	De Louviers	3
15.	15.	Leaf: intensity of green colour		
QN		light		3
VG		medium		5
		dark		7
16.	16.	16. Non-plain type varieties only: Leaf: distance between lobes		
(+)	(+)	short	short D'été à cœur jaune, De Louviers, Wallonne	
QN		medium	De Meaux	5
VG		long	De Ruffec, Gloire de l'Exposition, Grosse Pancalière	

CPVO No.	UPOV No	Characteristics	Examples	Note
17.	19.	Leaf: creasing		
QN		weak Argentée Mirabel, De Namur		3
VG		medium	Batavia Améliorée, D'Hiver de Provence	5
		strong	Blonde à cœur plein, De Ruffec	7
18.	20.	Plain type varieties only: Leaf: glossiness		
QN		weak	D'Hiver du Var	3
VG		medium	Argentée Mirabel, Blonde à cœur plein	5
		strong		7
19.	21.	Non-plain type varieties only: Leaf: ratio length of midrib without lamina/total length of leaf		
(+)	(+)	very small	D'Olivet	1
QN		small De Louviers		3
MS		medium	Wallonne	
		large	De Namur	7
		very large	Toujours Blanche	9
20.	22.	Leaf: width of midrib at base		
(+)	(+)	very narrow	Blanche, De Louviers, Toujours	1
QN		narrow	D'été d'Anjou, d'Hiver du Var	3
MS/VG		medium	D'été à cœur jaune, Grosse bouclée 2	5
		broad	Blonde à cœur plein, Wallonne	7
21.	23.	Non-plain type varieties only: Leaf: colour of midrib at base		
PQ		white	D'été à cœur jaune	
VG		pink	De Meaux	
22.	24.	24. Stem: height		
QN		short De Louviers		3
MS/VG		medium	D'été à cœur jaune, Vicor	5
		tall	Cornet de la Loire, D'Hiver deProvence	7

CPVO No.	UPOV No	Characteristics	Examples	Note
23.	25.	Stem: fasciation		
QL	absent		Cornet d'Anjou, D'Hiver de Provence, Ruffec	1
VG		present	D'été d'Anjou, Golda, Grosse bouclée2	9
24.	26.	Stem: attitude of branches		
QN		erect	Batavia Améliorée, D'Olivet, Grosse bouclée 2, Toujours Blanche	1
VG		semi-erect	D'été d'Anjou	3
		horizontal	Ariga, Canta, Emilie	5
25.	27. Plain type varieties only: Stem: shape of stipules			
PQ	elliptic		Argentée Mirabel	1
VG	broad elliptic		Blonde à cœur plein	2
	circular Solera		Solera	3
26.	28.	Flower: colour		
PQ		white	De Louviers, Pommant seule	1
VG		pink	Lisuna, Pinkstar, Rosabella	2
		blue	De Meaux, De Namur, Grosse bouclée2	3
G		violet blue	Alaska, Ariga, Sally, Wallonne	4
27.	29.	Time of harvest maturity		
QN		early	Sally	3
MG		medium	Géante d'Hiver	5
		late	Wallonne	7
		very late	Cornet d'Anjou	9

CPVO No.	UPOV No	Characteristics	Examples	Note
28.	30.	Time of bolting		
QN		very early	Isadora, Noveli	1
MG		early	De Meaux, Pommant seule	3
	medium		Elody, Sally	5
		late	Blonde à cœur plein, De Namur	7
G		very late	Excel, Foxie, Snoopie	9

#### **EXPLANATIONS AND METHODS**

#### Ad 1, 2, 3: Plant: botanical type and sub-types

Endive varieties can be divided into 'Plain type' and 'Cut type' as well as an 'Intermediate type':

- Plain type (*C. endivia* var. *latifolia*): Endives of the plain type are characterized by their full foliage with serrated margins. They differ from those of the cut type in that their leaves are broader, undulating or curled-up with marginal dentation and incurved towards the heart of the plant.

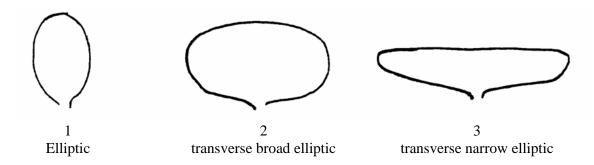
Plain type includes the following sub-types:

- (1) <u>Grosse bouclée</u>: short, broad foliage; large, full heart with white, tightly-curled heart leaves.
- (2) A cœur plein: somewhat flattened shape because the partly incurved inner leaves tend to cover the heart, thus forming quite a noticeable ball low down; the ball is broad, with crinkly leaves.
- (3) <u>Géante maraichère: very voluminous variety of erect growth habit, abundant blond-green foliage and a tightly-closed heart.</u>
- (4) <u>Cornet</u>: compared with the other plain-type endives this one has fewer but much more ample leaves, almost as broad as they are long, the margins broken up into numerous elongated serrations. The leaf, initially folded in the centre of the plant, spreads outwards as it grows, like the bell of a trumpet, often forming a sort of cap that continues for some time to envelop the younger, inner leaves, so forming a true heart.
- <u>Cut type (*C. endivia* var.*crispa*)</u>: Endives of the cut type are characterized by their numerous leaves disposed in a rosette shape, deeply indented and creased, smooth and more or less serrated.

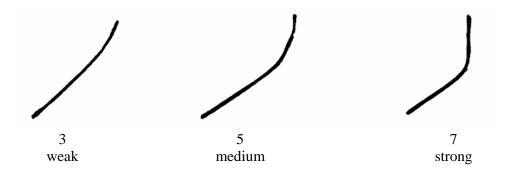
Cut type includes the following sub-types:

- (1) <u>Wallonne</u>: this type is characterized by its long, broad leaves cut into symmetrical lobes, with finely indented, curly margins and relatively narrow ribs.
- (2) <u>Louviers</u>: this type is characterized by very fine ribs, very finely and deeply indented, not very curly foliage and a tight heart.
- (3) <u>D'été à cœur jaune</u>: this type is characterized by its broad white and fleshy ribs and semifine, spreading cut foliage, medium-indented, and quite a tight yellow heart.
- <u>Intermediate type</u>: the leaves are of the size of the plain type with the outline of a semi-fine cut type.

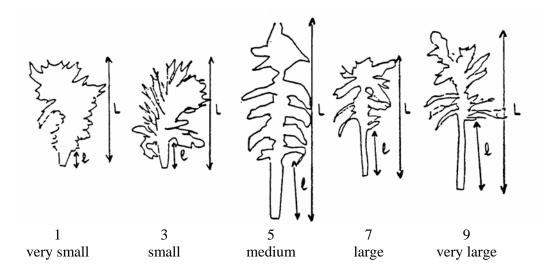
Ad 6: Heart: shape in longitudinal section



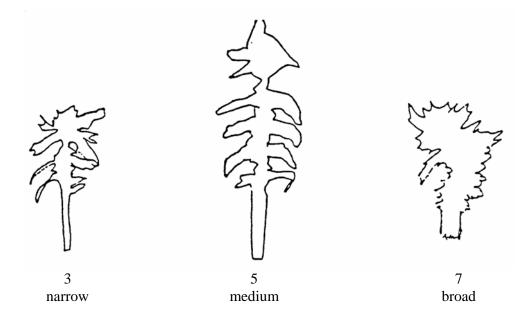
Ad 10: Leaf: incurving of distal part



Ad 19: Non-plain type varieties only: Leaf: ratio length of midrib without lamina (1)/total length of leaf (L)



## Ad 20: Leaf: width of midrib at base



## **LITERATURE**

No specific literature

## ANNEX II



	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.	<b>Botanical taxon:</b> Name of the genus, species or sub-species to which the variety belongs and common name
	Cichorium endivia L.
	ENDIVE
2.	Applicant(s): Name(s) and address(es), phone and fax number(s), Email 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	<b>Breeding, maintenance and reprodu</b> Please indicate breeding scheme, parer				
4.2	Geographical origin of the variety: the	he region and the country in which t	the variety was bred or		
	discovered and developed	,	Ž		
5.	Characteristics of the variety to be in corresponding characteristic in the CP which best corresponds).				
	Characteristics	Example varieties	Note		
5.1 (1)	Plant: botanical type				
	plain type	Cichorium endivia var. latifolia	1[]		
	intermediate type		2[]		
	cut type	Cichorium endivia var. crispa	3[]		
5.2 (2)	Plain type varieties only: Plant: sub-t	ype			
	Grosse bouclée		1[]		
	A coeur plein		2[]		
	Géante maraîchère		3[]		
	Cornet		4[]		

	Characteristics	Example varieties	Note
5.3 (3)	Non-plain type varieties only: Plant:	sub-type	
	Wallonne		1[]
	Louviers		2[]
	D'été à coeur jaune		3 [ ]
	Other types (including intermediate types between cut and plain types)		4[]
5.4 (6)	Heart: shape in longitudinal section		
	elliptic	Cornet de la Loire	1[]
	transverse broad elliptic	D'été à cœur jaune	2[]
	transverse narrow elliptic	Argentée Mirabel, De Louviers, Golda	3[]
5.5 (7)	Heart: colour		
	yellowish green	Blonde à cœur plein, Toujours Blanche	1[]
	green	Reine d'Hiver	2[]
5.6 (14)	Leaf: colour		
	yellowish green	Blonde à cœur plein, Toujours Blanche	1[]
	green	Batavia Améliorée, D'été d'Anjou, De Namur	2[]
	greyish green	De Louviers	3[]
5.7 (26)	Flower: colour		
	white	De Louviers, Pommant seule	1[]
	pink	Lisuna, Pinkstar, Rosabella	2[]
	blue	De Meaux, De Namur, Grosse bouclée 2	3[]
	violet blue	Alaska, Ariga, Sally, Wallonne	4[]

	Charact	teristics	]	Example varieties	Note
5.8 (28)	Time of boltin	g			
(20)	very early		Isadora,	Noveli	1[]
	early		De Meau	ux, Pommant seule	3[]
	medium		Elody, S	ally	5[]
	late		Blonde à	a cœur plein, De Namur	7[]
	very late		Excel, S	noopie, Foxie	9[]
6. S	imilar varieties	and differences from t	hese vario	eties:	
	omination of ilar variety	Characteristic in whi similar variety is diff		State of expression of similar variety	State of expression of candidate variety
		al states of expressions of mation which may help			ze of the difference
		_			echnical Questionnaire.
7.1 R	esistance to ne	sts and diseases			
712 2	constance to pe	ous una uiscuses			
7.2 S	pecial condition	ns for the examination	of the va	ariety	
[	] YES, please	e specify			
[	] NO				

7.3	Other information				
	[ ] 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 EC/2001/18 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					
	<b>9.1</b> 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 of pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.					
	2 The plant material should not have undergone any treatment which would affect the appression of the characteristics of the variety, unless the competent authorities allow or quest such treatment. If the plant material has undergone such treatment, full details of the eatment must be given. In this respect, please indicate below, to the best of your nowledge, if the plant material to be examined has been subjected to:					
	(a) Microorganisms (e.g. virus, bacte	eria, phytoplasma)	[ ] Yes	[ ] No		
	(b) Chemical treatment (e.g. growth	retardant or pesticide)	[ ] Yes	[ ] No		
	(c) Tissue culture		[ ] Yes	[ ] No		
	(d) Other factors		[ ] Yes	[ ] No		
	Please provide details of where you	nave indicated "Yes":				
	I/we hereby declare that to the best of my/our knowledge the information given in this form is complete and correct.					
	Date	Signature	Na	me		

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