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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

FESTULOLIUM *

UPOV Code: FESTL

(×Festulolium Aschers. et Graebn.)

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative Names:*

Latin	English	French	German	Spanish
×Festulolium Aschers. et Graebn.	Festulolium	Festulolium	Festulolium	Festulolium, Festuca, Cañuela

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of hybrids resulting from the crossing of a species of the genus Festuca L. with species of the genus Lolium L. (×Festulolium Aschers. et Graebn.).

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of seed.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

1.5 kg.

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should be stated by the applicant.

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 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.

3. Method of Examination

3.1 Number of Growing Cycles

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

3.2 Testing Place

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

3.3 Conditions for Conducting the Examination

3.3.1 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.

3.3.2 The optimum stage of development for the assessment of each characteristic is indicated by a number in the second column of the Table of Characteristics. The stages of development denoted by each number are described at the end of Chapter 8.

3.3.3 The recommended method of observing the characteristic is indicated by the following key in the second column of the Table 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

3.3.4 The recommended type of plot in which to observe the characteristic is indicated by the following key in the second column of the Table of Characteristics:

A: spaced plants
B: row plot
C: special test

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 60 spaced plants which should be divided between at least 2 replicates. In addition, the test may include 8 meters of row plot which should be divided between at least 2 replicates. The density of the seed should be such that around 200 plants/meter can be expected.

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 Number of Plants / Parts of Plants to be Examined

3.5.1 Unless otherwise indicated, all observations on single plants should be made on 60 plants or parts taken from each of 60 plants and any other observations made on all plants in the test. 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.

3.6 Additional Tests

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 Distinctness

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

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 Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.2 Uniformity

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 The assessment of uniformity should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.3 Stability

4.3.1 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 tested by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

(a) Plant: ploidy (characteristic 1)

(b) Plant: time of inflorescence emergence (characteristic 8)

(c) Plant: length of longest stem, inflorescence included (when fully expanded) (characteristic 12)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

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.

6.3 Types of Expression

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 Example Varieties

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

6.5 Legend

(*) Asterisked characteristic – see Chapter 6.1.2

QL: Qualitative characteristic – see Chapter 6.3
QN: Quantitative characteristic – see Chapter 6.3
PQ: Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS: See Chapter 3.3.3
A, B, C: See Chapter 3.3.4

(a)-(c) See Explanations on the Table of Characteristics in Chapter 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8.2

(10)-(68) See Explanations on the Table of Characteristics in Chapter 8.3.

7. Table of Characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres

Char No.		English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1. (*) (+)	**C**	**Plant: ploidy**	**Plante : ploïdie**	**Pflanze: Ploidie**	**Planta: ploidía**		
QL		diploid	diploïde	diploid	diploide	Matrix	2
		tetraploid	tétraploïde	tetraploid	tetraploide	Paulita, Perun, Prior	4
		hexaploid	hexaploïde	hexaploid	hexaploide	Felina	6
2.	**20-29 VS A VG B**	**Plant: growth habit without vernalization**	**Plante : port sans vernalisation**	**Pflanze: Wuchsform ohne Vernalisation**	**Planta: hábito de crecimiento sin vernalización**		
QN	**(a)**	semi-erect	demi-dressé	halbaufrecht	semierecto		3
		medium	moyen	mittel	medio	Lofa, Paulita	5
		semi-prostrate	demi-étalé	halbliegend	semipostrado	Sulino	7
3.	**20-29**	**Leaf: length**	**Feuille : longueur**	**Blatt: Länge**	**Hoja: longitud**		
(+)	**VG B**						
QN		short	courte	kurz	corta		3
		medium	moyenne	mittel	media		5
		long	longue	lang	larga		7
4.	**20-29**	**Leaf: width**	**Feuille : largeur**	**Blatt: Breite**	**Hoja: anchura**		
(+)	**VG B**						
QN		narrow	étroite	schmal	estrecha	Lesana	3
		medium	moyenne	mittel	media	Prior	5
		broad	large	breit	ancha	Felopa	7

Char No.		English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
5. **(+)**	**30** **MS A VS A**	**Plant: width after vernalization**	**Plante : largeur après vernalisation**	**Pflanze: Breite nach der Vernalisation**	**Planta: anchura después de la vernalización**		
QN		narrow	étroite	schmal	estrecha	Prior	3
		medium	moyenne	mittel	media	Sulino	5
		broad	large	breit	ancha	Perun	7
6.	**30-39** **VS A VG B**	**Plant: growth habit after vernalization**	**Plante : port après vernalisation**	**Pflanze: Wuchs-höhe nach der Vernalisation**	**Planta: hábito de crecimiento después de la vernalización**		
QN	**(a)**	semi-erect	demi-dressé	halbaufrecht	semierecto	Paulita	3
		medium	moyen	mittel	medio	Lofa	5
		semi-prostrate	demi-étalé	halbliegend	semipostrado	Prior	7
7.	**30-39** **VG B**	**Plant : height after vernalization**	**Plante : hauteur après vernalisation**	**Pflanze: Höhe nach der Vernalisation**	**Planta: altura después de la vernalización**		
QN		short	basse	niedrig	baja	Prior	3
		medium	moyenne	mittel	media	Perun	5
		tall	haute	hoch	alta		7
8. **(*)** **(+)**	**MS A MG B**	**Plant: time of inflorescence emergence**	**Plante : époque d'épiaison**	**Pflanze: Zeitpunkt des Erscheinens der Blütenstände**	**Planta: época de la emergencia de las inflorescencias**		
QN		early	précoce	früh	temprana	Sulino	3
		medium	moyenne	mittel	media	Prior	5
		late	tardive	spät	tardía		7
9. **(+)**	**MS A**	**Plant: natural height at inflorescence emergence**	**Plante : hauteur naturelle à l'épiaison**	**Pflanze: Wuchs-höhe bei Erscheinen der Blütenstände**	**Planta: altura en la época de la emergencia de las inflorescencias**		
QN	**(b)**	short	basse	niedrig	baja	Prior	3
		medium	moyenne	mittel	media	Perun	5
		tall	haute	hoch	alta	Felina	7

Char No.		English	français	Deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
10. (*) (+)	**MS A**	**Flag leaf: length**	**Dernière feuille : longueur**	**Fahnenblatt: Länge**	**Última hoja: longitud**		
QN	**(b)**	short	courte	kurz	corta	Prior	3
		medium	moyenne	mittel	media	Sulino	5
		long	longue	lang	larga	Perun	7
11. (*) (+)	**MS A**	**Flag leaf: width**	**Dernière feuille : largeur**	**Fahnenblatt: Breite**	**Última hoja: anchura**		
QN	**(b)**	narrow	étroite	schmal	estrecha	Prior	3
		medium	moyenne	mittel	media	Lofa	5
		broad	large	breit	ancha		7
12. (*) (+)	**60-68 MS A**	**Plant: length of longest stem, inflorescence included (when fully expanded)**	**Plante : longueur de la tige la plus longue, y compris l'inflorescence (à la fin de l'élongation)**	**Pflanze: Länge des längsten Halms, einschließlich Blütenstand (wenn voll ausgebildet)**	**Planta: longitud del tallo más largo, incluida la inflorescencia (cuando está completamente expandida)**		
QN	**(c)**	short	courte	kurz	corta	Prior	3
		medium	moyenne	mittel	media	Sulino	5
		long	longue	lang	larga	Felina	7
13. (+)	**60-68 MSA**	**Plant: length of upper internode**	**Plante : longueur du dernier entre-nœud**	**Pflanze: Länge des obersten Internodiums**	**Planta: longitud del entrenudo superior**		
QN	**(c)**	short	court	kurz	corto		3
		medium	moyen	mittel	medio		5
		long	long	lang	largo		7
14. (+)	**60-68 MS A**	**Inflorescence: length**	**Inflorescence : longueur**	**Blütenstand: Länge**	**Inflorescencia: longitud**		
QN	**(c)**	short	courte	kurz	corta		3
		medium	moyenne	mittel	media	Prior	5
		long	longue	lang	larga	Perun	7

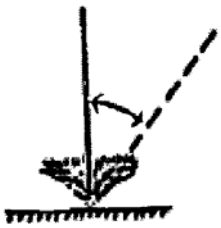
8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

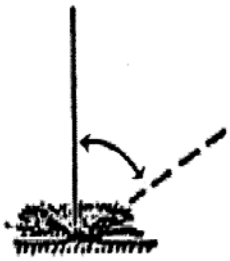
Characteristics containing the following key in the second column of the Table of Characteristics should be examined as indicated below:

(a) The observation of growth habit (characteristics 2 and 6) should be made visually from the attitude of the leaves of the plant as a whole. The angle formed by the imaginary line through the region of greatest leaf density and the vertical should be used. Characteristic 2 may be recorded during the growing season in which the trials are planted.

3
semi-erect



5
medium



7
semi-prostrate

(b) To be recorded on each individual plant at the time of inflorescence emergence, that is at the same time as characteristic 8.

(c) Measurements for characteristics 12 to 14 should be made on the longest stem.

8.2 Explanations for individual characteristics

Ad. 1: Plant: ploidy

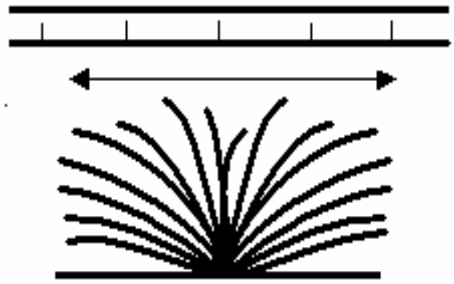
The ploidy of the plant can be determined by standard cytological methods.

Ad. 3: Leaf: length (at vegetative stage)
Ad. 4: Leaf: width

The length and width of leaf should be observed at the vegetative stage.

Ad. 5: Plant: width after vernalization

To allow for irregular plant shapes (for example due to wind shaping effects) the plant width is determined by taking two measurements (MS A) or by making two visual observations (VS A) of the diameter across the plant at right angles to each other and then using the average of these two figures as the plant width.



Ad. 8: Plant: Time of inflorescence emergence

Spaced plants or row plots should be observed at least twice per week.

Plots with spaced plants

The date of inflorescence emergence of each single plant should be observed. A single plant is considered to have headed when the tip of three inflorescences can be seen protruding from the flag leaf sheath (Growth Stage DC 50). From the single plant data, a mean date per plot and a mean date per variety is obtained.

Row plots

The time of inflorescence emergence is the date at which the average plot stage DC 54 has been reached. This date should – if necessary – be obtained by interpolation. At each observation date, the average plot stage should be expressed in one of the following growth stages:

(1)	DC 50	First spikelet of inflorescence just visible
(2)	DC 52	25% of the inflorescence emerged (across all stems)
(3)	DC 54	50% of the inflorescence emerged (across all stems)
(4)	DC 56	75% of the inflorescence emerged (across all stems)

Ad. 9: Plant: natural height at inflorescence emergence

To be recorded by measuring the average height of the foliage in the centre of the plant.

Ad. 10: Flag leaf: length

To be measured from the ligule to the tip of the flag leaf on the longest stem.

Ad. 11: Flag leaf: width

To be measured one third of the way from the base to the tip of the flag leaf on the longest stem.

Ad. 12: Plant: length of longest stem, inflorescence included (when fully expanded)

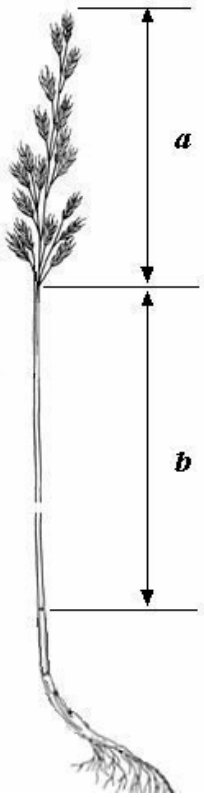
To be recorded in the field from ground level, when the inflorescence is fully expanded.

Ad. 13: Plant: length of upper internode
Ad. 14: Inflorescence: length

To be measured from the top node to the base of the inflorescence.

Char. 13: b = The part of the stem above the upper node up to the beginning of the inflorescence is the upper internode

Char. 14: a = Length of the inflorescence (of the longest stem)



8.3 Growth stages of grasses derived from the decimal code for the growth stages of cereals (Zadoks, et al., 1974).

This decimal code is in close conformity with the BBCH-code (Meier, 1997)

Seedling growth (seedling: one shoot)

DC 10	First leaf through coleoptile
DC 15	Five leaves unfolded
DC 19	Nine or more leaves unfolded

Tillering

DC 20	Main shoot only (beginning of tillering)
DC 23	Main shoot and 3 tillers
DC 25	Main shoot and 5 tillers
DC 29	Main shoot and 9 more tillers

Stem elongation

DC 30	Pseudo-stem erection (formed by sheaths of leaves)
DC 31	First node detectable (early stem extension across all stems)
DC 35	Fifth node detectable (50% extension across all stems)
DC 39	Flag leaf ligula/collar just visible (pre-boot stage)

Booting

DC 41	Flag leaf sheath extending (little enlargement of the inflorescence, early boot-stage)
DC 45	Boots swollen (late-boot stage)
DC 47	First leaf sheath opening
DC 49	First awns visible (in awned forms only)

Inflorescence emergence (mostly non-synchronous)

DC 50	First spikelet of inflorescence just visible
DC 52	25% of the inflorescence emerged (across all stems)
DC 54	50% of the inflorescence emerged (across all stems)
DC 56	75% of the inflorescence emerged (across all stems)
DC 58	Emergence of inflorescence completed

Anthesis (mostly non-synchronous)

DC 60	Beginning of anthesis
DC 64	Anthesis half-way
DC 68	Anthesis complete

9. Literature

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Zadoks, J.C., Chang, T.T., and Konzak, C.F., 1974: A decimal code for the growth stages of cereals. Weed Research 14: 415-421.

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

	Application date: (not to be filled in by the applicant)

TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire:

Botanical Name	×Festulolium Aschers. et Graebn.
Common Name	Festulolium

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	

Breeder (if different from applicant)

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

[#]4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross [ ]
(please state parent varieties)
……

(b) partially known cross [ ]
(please state known parent variety(ies))
……

(c) unknown cross [ ]

4.1.2 Mutation [ ]
(please state parent variety)
……

4.1.3 Discovery and development [ ]
(please state where and when discovered
and how developed)
……

4.1.4 Other [ ]
(please provide details)

……

4.2 Method of propagating the variety

[#] Auhorities may allow certain parts of this information to be given in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

	Characteristics	Example Varieties	Note
5.1 (1)	**Plant: ploidy**		
	diploid	Matrix	2[ ]
	tetraploid	Paulita, Perun, Prior	4[ ]
	hexaploid	Felina	6[ ]
5.3 (8)	**Plant: time of inflorescence emergence**		
	early	Sulino	3[ ]
	medium	Prior	5[ ]
	late		7[ ]
5.4 (12)	**Plant: length of longest stem, inflorescence included (when fully expanded)**		
	short	Prior	3[ ]
	medium	Sulino	5[ ]
	long	Felina	7[ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example	Plant: length of longest stem, inflorescence included (when fully expanded)	short	medium

Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

[#]7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [ ] No [ ]

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Main use

(a) forage [ ]
(b) amenity [ ]
(c) other [ ]
(please provide details)

7.4 Type

Festuca- type [ ] Lolium - type [ ]

Please describe inflorescence type and/or indicate other identifying characteristic/s:

……

7.5 Other information

[#] Auhorities may allow certain parts of this information to be given in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:

8. Authorization for release

(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

If the answer to (b) is yes, please attach a copy of the authorization.

9. Information on plant material to be examined or submitted for examination.

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) Yes [ ] No [ ]

(b) Chemical treatment (e.g. growth retardant, pesticide) Yes [ ] No [ ]

(c) Tissue culture Yes [ ] No [ ]

(d) Other factors Yes [ ] No [ ]

Please provide details for where you have indicated “yes”.

……

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant’s name

Signature Date

[End of document]