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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

Oats

UPOV Code: AVENA_NUD; AVENA_SAT

Avena nuda L.; Avena sativa L.

[*]

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by (an) expert(s) from Spain

to be considered by the

Technical Working Party for Agricultural Crops
at its forty-fourth session
to be held in Obihiro, Japan,
from 2015-07-06
to 2015-07-10

Alternative Names:[*]

Botanical name	*English*	*French*	*German*	*Spanish*
Avena nuda L.	Naked Oats	Avoine nue	Nackthafer	Avena desnuda
Avena sativa L., Avena byzantina K. Koch	Oats	Avoine	Hafer	Avena

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 Avena nuda L., Avena sativa L..

To check if Avena strigosa Schreb. should be included.

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:

3 kg
Panicles (if requested): 150

The panicles should be well developed and should contain a sufficient number of viable seeds to establish a satisfactory row of plants for observation.

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

3.1.1 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 in Chapter 8.

3.4 Test Design

3.4.1 Each test should be designed to result in a total of at least 2000 plants, which should be divided between at least 2 replicates.

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.

3.4.3 The assessment of characteristic "Plant: seasonal type" should be carried out on at least 300 plants.

3.4.4 If test on panicle rows is conducted, at least 100 panicle rows should be observed.

3.5 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.

4.1.4 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 10 plants or parts taken from each of 10 plants and any other observations made on all plants in the test, disregarding any off-type plants. In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 1.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the second 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. color 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 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 recommended sample size for the assessment of uniformity is indicated by the following key in the table of characteristics:

A sample size of 100 plants/parts of plants/panicle-rows
B sample size of 2000 plants or parts of plants

4.2.3 For the assessment of uniformity in a sample of 2000 plants or parts of plants, a population standard of 0.1% and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 2000 plants, 5 off-types are allowed.

4.2.4 For the assessment of uniformity in a sample of 100 panicle-rows, plants or parts of plants, a population standard of 1% and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 100 panicle-rows, plants or parts of plants, 3 off-types are allowed. A panicle-row is considered to be an off-type panicle-row if there is more than one off-type plant within that ear-row.

4.2.5 For "A" characteristics the assessment of uniformity can be done in 2 steps. In a first step, 20 plants are observed. If no off-types are observed, the variety is declared to be uniform. If more than 3 off-types are observed, the variety is declared not to be uniform. If 1 to 3 off-types are observed, an additional sample of 80 plants or parts of plants must be observed.

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 further examined by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the initial 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) Stem: hairiness of uppermost node (characteristic 6)
(b) Glumes: glaucosity (characteristic 9)
(c) Grain: husk (characteristic 14)
(d) Grain: colour of lemma (characteristic 17)
(e) Plant: seasonal type (characteristic 21)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 “Examining Distinctness”.

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

6.2.1 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.

6.2.2 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	Note
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

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

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 4.1.5
(+)	See Explanations on the Table of Characteristics in Chapter 8.	
A, B	See Chapter 4.2.2	

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

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. QN VG|B 25-29 (+)					
Plant: growth habit	**Plante : port**	**Pflanze: Wuchsform**	**Planta: porte**		
erect	dressé	aufrecht	erecto		1
semi-erect	demi-dressé	halbaufrecht	semierecto		3
intermediate	demi-dressé à demi-étalé	intermediär	intermedio		5
semi-prostrate	demi-étalé	halbliegend	semipostrado		7
prostrate	étalé	liegend	postrado		9
2. (*) QN VG|A 25-29 (+)					
Lowest leaves: hairiness of sheaths					
absent or very weak					1
weak					3
medium					5
strong					7
very strong					9
3. (*) QN VG|A 40-45 (+)					
Leaf blade: hairiness of margins of leaf below flag leaf					
absent or very weak					1
weak					3
medium					5
strong					7
very strong					9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4. QN VG|B 47-51 (+) **Plant: frequency of plants with recurved flag leaves**					
absent or very low					1
low					3
medium					5
high					7
very high					9
5. (*) QN MG|B 50-52 **Time of panicle emergence (first spikelet visible on 50% of panicles)**					
very early					1
early					3
medium					5
late					7
very late					9
6. (*) QL VG|A 60-65 (+) **Stem: hairiness of uppermost node**					
absent					1
present					9
7. QN VG|A 60-65 **Stem: intensity of hairiness of uppermost node**					
very weak					1
weak					3
medium					5
strong					7
very strong					9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8. QN VG|B 70-75 (+) **Panicle: attitude of branches**					
erect					1
semi-erect					3
horizontal					5
drooping					7
strongly drooping					9
9. (*) QN VG|B 65-69 **Glumes: glaucosity**					
absent or very weak					1
weak					3
medium					5
strong					7
very strong					9
10. QN MS|A VG|A 70-75 **Glumes: length**					
short					3
medium					5
long					7
11. QN VG|A 70-75 **Primary grain: intensity of glaucosity of lemma**					
absent or very weak					1
weak					3
medium					5
strong					7
very strong					9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12. (*) QN MG|B 80-85 **Plant: length**	**Plante : longueur**	**Pflanze: Länge**	**Planta: longitud**		
very short	très courte	sehr kurz	muy corta		1
short	courte	kurz	corta		3
medium	moyenne	mittel	media		5
long	longue	lang	larga		7
very long	très longue	sehr lang	muy larga		9
13. QN MS|A VG|B 80-85 **Panicle: length**					
very short					1
short					3
medium					5
long					7
very long					9
14. (*) QL VG|A 92 **Grain: husk**					
absent					1
present					9
15. QN VG|A 92 **Primary grain: tendency to be awned**					
absent or very weak					1
weak					3
medium					5
strong					7
very strong					9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16. QN MG|A MS|A 92 **Primary grain: length of lemma**					
very short					1
short					3
medium					5
long					7
very long					9
17. (*) QL VG|A 92 **Grain: colour of lemma**					
white					1
yellow					2
brown					3
grey					4
black					5
18. QN VG|A 92 (+) **Primary grain: hairiness of base**					
absent or very weak					1
weak					3
medium					5
strong					7
very strong					9

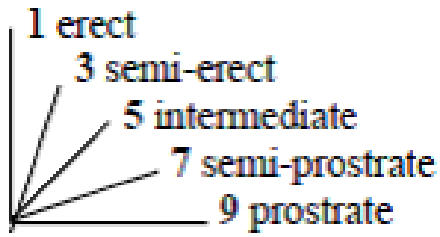
English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
19. QN VG|A 92 (+) **Primary grain: length of basal hairs**					
short					3
medium					5
long					7
20. QN VG|A 92 (+) **Primary grain: length of rachilla**					
short					3
medium					5
long					7
21. (*) PQ VG - **Plant: seasonal type**	**Plante : type de développement**	**Pflanze: Wechselverhalten**	**Planta: tipo de desarrollo**		
winter type					1
alternative type					2
spring type					3

8. Explanations on the Table of Characteristics

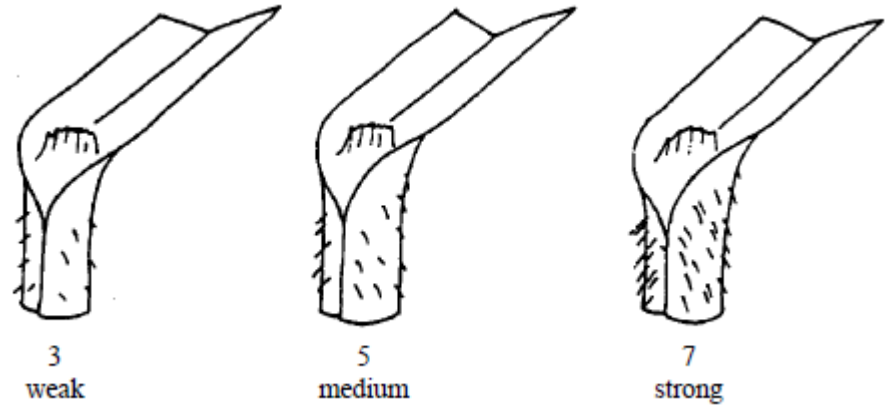
8.1 Explanations for individual characteristics

Ad. 1: Plant: growth habit

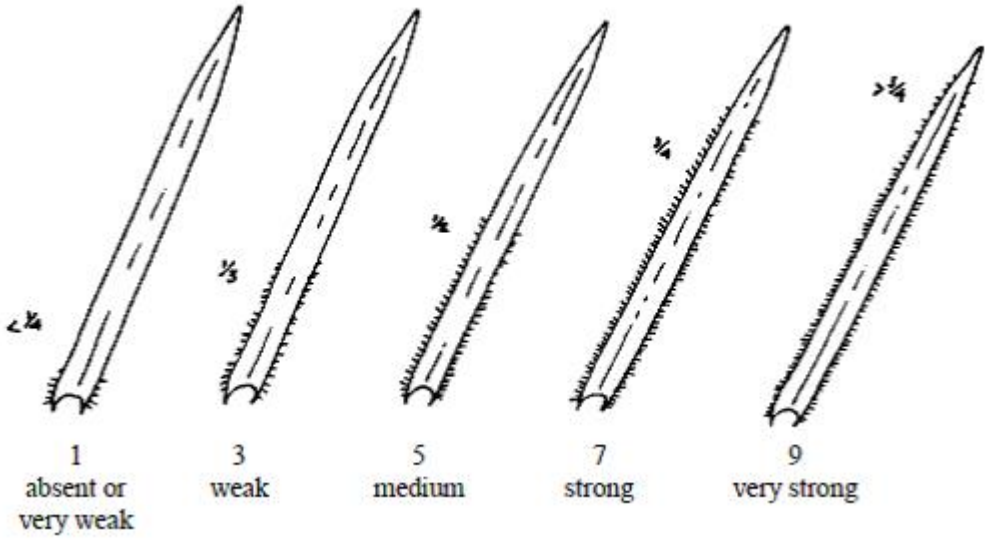
The growth habit should be assessed visually from the attitude of the leaves and tillers. The angle formed by the outer leaves and the tillers with an imaginary vertical axis should be used.



Ad. 2: Lowest leaves: hairiness of sheaths



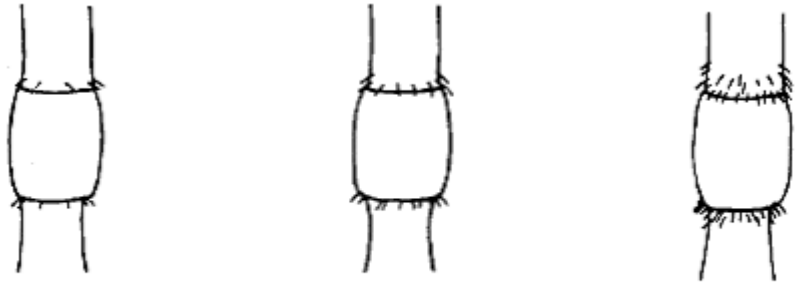
Ad. 3: Leaf blade: hairiness of margins of leaf below flag leaf



Ad. 4: Plant: frequency of plants with recurved flag leaves

1. all flag leaves are rectilinear
3. about 1/4 of the plants with recurved flag leaves
5. about 1/2 of the plants with recurved flag leaves
7. about 3/4 of the plants with recurved flag leaves
9. all flag leaves are recurved

Ad. 6: Stem: hairiness of uppermost node

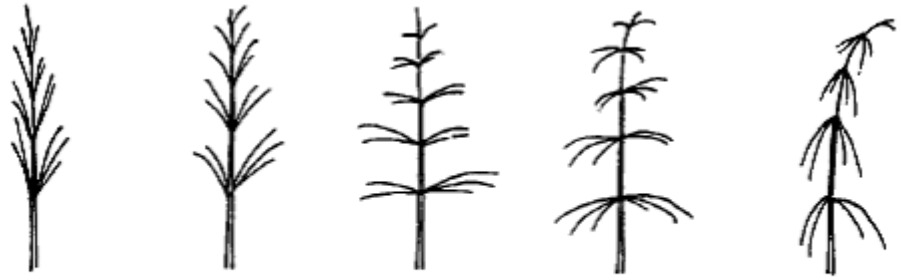


3
weak

5
medium

7
strong

Ad. 8: Panicle: attitude of branches



1
erect

3
semi-erect

5
horizontal

7
drooping

9
strongly drooping

Ad. 18: Primary grain: hairiness of base

1
absent or very weak

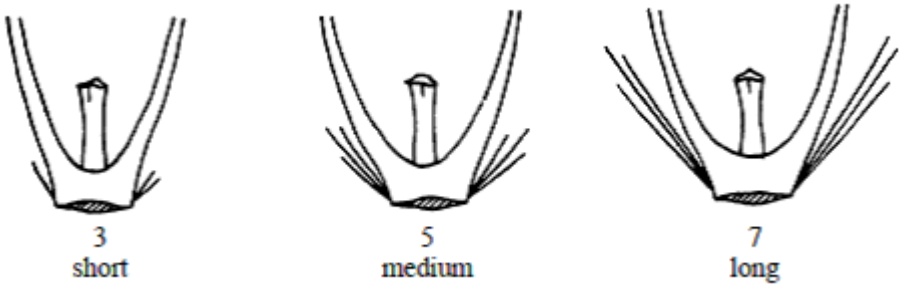
3
weak

5
medium

7
strong

9
very strong

Ad. 19: Primary grain: length of basal hairs



3
short

5
medium

7
long

Ad. 20: Primary grain: length of rachilla

3
short

5
medium

7
long

9. Literature

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			
1.1.1	Botanical Name	Avena nuda L.	[ ]
1.1.2	Common Name	Naked Oats	
1.2.1	Botanical Name	Avena sativa L.	[ ]
1.2.2	Common Name	Oats	

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

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

(a) Self-pollination [ ]
(b) Hybrid [ ]
(c) Other [ ]
(please provide details)

.....
: :
: :
:.....:

4.2.2 Other [ ]
(please provide details)

.....
: :
: :
:.....:

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 (2)	**Lowest leaves: hairiness of sheaths**		
	absent or very weak		1[ ]
	weak		3[ ]
	medium		5[ ]
	strong		7[ ]
	very strong		9[ ]
5.2 (5)	**Time of panicle emergence (first spikelet visible on 50% of panicles)**		
	very early		1[ ]
	early		3[ ]
	medium		5[ ]
	late		7[ ]
	very late		9[ ]
5.3 (6)	**Stem: hairiness of uppermost node**		
	absent		1[ ]
	present		9[ ]
5.4 (9)	**Glumes: glaucosity**		
	absent or very weak		1[ ]
	weak		3[ ]
	medium		5[ ]
	strong		7[ ]
	very strong		9[ ]
5.5 (12)	**Plant: length**		
	very short		1[ ]
	short		3[ ]
	medium		5[ ]
	long		7[ ]
	very long		9[ ]
5.6 (14)	**Grain: husk**		
	absent		1[ ]
	present		9[ ]

5.7 (17)	**Grain: colour of lemma**	
	white	1[ ]
	yellow	2[ ]
	brown	3[ ]
	grey	4[ ]
	black	5[ ]
5.8 (21)	**Plant: seasonal type**	
	winter type	1[ ]
	alternative type	2[ ]
	spring type	3[ ]

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			

Comments:

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 Other information

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.

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

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]