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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

OATS*

UPOV Code(s):
AVENA_SAT;
AVENA_NUD

Avena sativa L.;
Avena nuda L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

Alternative names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Avena sativa</i> L.	Oats	Avoine	Hafer	Avena
<i>Avena nuda</i> L.	Naked Oats	Avoine nue	Nackthafer	Avena desnuda

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 sativa* L. and *Avena nuda* L..

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 and panicles, if requested.

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

Seed: 3 kg
Panicles: 120 (if requested)

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.

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

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 Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.3.

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 assessment of the characteristic "Seasonal type" should be carried out on at least 300 plants.

3.4.3 If tests on panicle rows are conducted, at least 100 panicle rows should be observed.

3.4.4 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 *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 or 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 of plants 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 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 These Test Guidelines have been developed for the examination of self-pollinated varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.

4.2.3 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

4.2.4 For the assessment of uniformity in a sample of 2000 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.

4.2.5 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 1 off-type plant within that panicle-row.

4.2.6 For characteristics with the key “A” in the list of characteristics the assessment of uniformity can be done in 2 steps. In a first step, 20 plants or parts of 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) Seed: color of lemma (characteristic 1)
- (b) Stem: hairiness of uppermost node (characteristic 7)
- (c) Glume: glaucosity (characteristic 9)
- (d) Grain: husk (characteristic 15)
- (e) Seasonal type (characteristic 22)

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.

Seasonal type is indicated as follow:

- (s) spring oat varieties
- (w) winter oat varieties

6.5 Legend

		English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
1	2	3	4	5	6	7	
		Name of characteristics in English	Nom du caractère en français	Name des Merkmals auf Deutsch	Nombre del carácter en español		
		states of expression	types d'expression	Ausprägungsstufen	tipos de expresión		

- 1 Characteristic number
- 2 (*) Asterisked characteristic – see Chapter 6.1.2
- 3 Type of expression
 QL Qualitative characteristic – see Chapter 6.3
 QN Quantitative characteristic – see Chapter 6.3
 PQ Pseudo-qualitative characteristic – see Chapter 6.3
- 4 Method of observation (and type of plot, if applicable)
 MG, MS, VG, VS – see Chapter 4.1.5
- 5 (+) See Explanations on the Table of Characteristics in Chapter 8.2
- 6 (a) See Explanations on the Table of Characteristics in Chapter 8.1
- 7 Growth stage key See Explanations on the Table of Characteristics in Chapter 8.3
- A sample size of 100 plants / parts of plants / panicle rows
 B sample size of 2000 plants

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

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1. (*)	QL	VG A	(a)	00			
	Seed: color of lemma	Semence : couleur de la glumelle inférieure	Samen: Farbe der äußeren Deckspelze	Semilla: color de la lema			
	white	blanche	weiß	blanca	(s) Harmony, (w) Gerald, (w) RGT Lineout		1
	yellow	jaune	gelb	amarilla	(s) Canyon, (w) Mascani, (w) Rhapsody		2
	brown	brune	braun	marrón	(s) Everest PZO, (w) Prevision		3
	black	noire	schwarz	negra	(s) RGT Iliade, (w) Calvaro		4
2.	QN	VG B	(+)	25-29			
	Plant: growth habit	Plante : port au tallage	Pflanze: Wuchsform	Planta: hábito de crecimiento			
	erect	dressé	aufrecht	erecta			1
	semi-erect	demi-dressé	halbaufrecht	semierecta	(s) Canyon, (s) Stella Doro		3
	intermediate	intermédiaire	mittel	media	(s) Matty, (w) RGT Lineout		5
	semi-prostrate	demi-étalé	halbliiegend	semipostrada	(s) WPB Elyann		7
	prostrate	étalé	liegend	postrada	(w) Ombrone		9
3.	QN	VG A	(+)	25-29			
	Lowest leaves: hairiness of sheaths	Feuilles de la base : pilosité des gaines	Basalblätter: Behaarung der Blattscheiden	Hojas inferiores: vellosidad de las vainas			
	absent or weak	absente ou faible	fehlend oder gering	ausente o débil	(s) Harmony, (w) Calvaro		1
	medium	moyenne	mittel	media	(s) Stella Doro, (w) Forridena		2
	strong	forte	stark	fuerte	(w) RGT Lineout		3

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
4. (*)	QN VG A	(+)	25-60			
	Leaf blade: hairiness of margins	Limbe : pilosité des bords	Blattspreite: Behaarung des Randes	Limbo: velloso de los bordes		
	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	(s) Harmony, (w) Flavia	1
	weak	faible	gering	débil	(s) WPB Elyann, (w) Calvaro	3
	medium	moyenne	mittel	media	(s) Armani, (w) Black Beauty	5
	strong	forte	stark	fuerte	(s) Stella Doro, (w) Ombrone	7
	very strong	très forte	sehr stark	muy fuerte	(w) Charming, (w) RGT Lineout	9
5.	QN VG B	(+)	47-51			
	Plant: frequency of plants with recurved flag leaves	Plante : fréquence de plantes avec la dernière feuille retombante	Pflanze: Häufigkeit von Pflanzen mit gebogenen obersten Blättern	Planta: frecuencia de plantas con la hoja bandera recurvada		
	absent or very low	absente ou très faible	fehlend oder sehr gering	ausente o muy baja	(w) Gerald	1
	low	faible	gering	baja	(s) Armani, (w) Charming	3
	medium	moyenne	mittel	media	(s) Apollon, (w) Forridena	5
	high	élevée	hoch	alta	(s) Matty, (w) Hendon	7
	very high	très élevée	sehr hoch	muy alta	(s) WPB Elyann	9
6. (*)	QN MG B	(+)				
	Time of panicle emergence	Époque de l'apparition de la panicule	Zeitpunkt des Rispschiebens	Época de emergencia de la panícula		
	very early	très précoce	sehr früh	muy temprana	(s) Rapidena	1
	early	précoce	früh	temprana	(s) Stella Doro, (w) Prevision	3
	medium	moyenne	mittel	media	(s) Ivory, (w) Ombrone	5
	late	tardive	spät	tardía	(w) Forridena	7
	very late	très tardive	sehr spät	muy tardía	(s) Everest PZO, (w) Gerald	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
7. (*)	QN	VG A	(+)	60-69		
	Stem: hairiness of uppermost node	Tige : pilosité du dernier nœud	Halm: Behaarung am obersten Knoten	Tallo: vellosidad del nudo superior		
	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	(s) Canyon, (w) Calvaro	1
	weak	faible	gering	débil	(s) Anchuela	3
	medium	moyenne	mittel	media	(w) Flavia	5
	strong	forte	stark	fuerte	(w) Forridena, (w) Mascani	7
	very strong	très forte	sehr stark	muy fuerte	(s) Kankan	9
8.	QN	VG B		60-69		
	Flag leaf: glaucosity of sheath	Dernière feuille : glaucescence de la gaine	Fahnenblatt: Bereifung der Blattscheide	Hoja bandera: glaucescencia de la vaina		
	absent or weak	absente ou faible	fehlend oder gering	ausente o débil	(s) Rapidena	1
	medium	moyenne	mittel	media	(s) Lennon, (w) Charming	3
	strong	forte	stark	fuerte	(s) Ivory, (w) Ombrone	5
9. (*)	QN	VG B		65-69		
	Glume: glaucosity	Glume : glaucescence	Hüllspelze: Bereifung	Gluma: glaucescencia		
	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	(s) Rapidena	1
	weak	faible	gering	débil	(s) Canyon, (w) Hendon	3
	medium	moyenne	mittel	media	(s) Harmony, (w) RGT Victorious	5
	strong	forte	stark	fuerte	(s) Komfort, (w) Black Beauty	7
	very strong	très forte	sehr stark	muy fuerte	(s) Odal	9
10.	QN	VG B	(+)	70-75		
	Panicle: attitude of branches	Panicule : port des ramifications	Rispe: Stellung der Seitenäste	Panícula: porte de las ramificaciones		
	erect	dressé	aufrecht	erectas	(s) M77	1
	semi-erect	demi-dressé	halbaufrecht	semierectas	(s) RGT Iliade, (w) Calvaro	2
	horizontal	horizontal	waagrecht	horizontales	(s) Ivory, (w) Balado	3
	semi-drooping	demi-retombant	überhängend	semicolgantes		4

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11.	QN	MS A VG A			70-75	
	Glume: length	Glume : longueur	Hüllspelze: Länge	Gluma: longitud		
	very short	très courte	sehr kurz	muy corta		1
	short	courte	kurz	corta	(s) Armani, (w) Maestro	3
	medium	moyenne	mittel	media	(s) Canyon, (w) Calvaro	5
	long	longue	lang	larga	(s) Lennon, (w) Prevision	7
	very long	très longue	sehr lang	muy larga	(s) Rapidena, (w) Ombrone	9
12. (*)	QN	VG A	(+)	(a)	70-75	
	Primary grain: glaucosity of lemma	Premier grain : glaucescence de la glumelle inférieure	Korn 1. Ordnung: Bereifung der äußeren Deckspelze	Grano principal: glaucoscencia de la lema		
	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	(s) Canyon, (w) RGT Lineout	1
	weak	faible	gering	débil	(s) Armani, (s) Ringsaker	3
	medium	moyenne	mittel	media	(s) Harmony, (s) Riina	5
	strong	forte	stark	fuerte	(s) Gabby, (s) Odal	7
	very strong	très forte	sehr stark	muy fuerte		9
13. (*)	QN	MG B	(+)		80-85	
	Plant: length	Plante : longueur	Pflanze: Länge	Planta: longitud		
	very short	très courte	sehr kurz	muy corta	(w) Balado, (w) Hendon	1
	short	courte	kurz	corta	(s) Kurt, (s) Rapidena	3
	medium	moyenne	mittel	media	(s) Armani, (w) Mascani	5
	long	longue	lang	larga	(s) Canyon	7
	very long	très longue	sehr lang	muy larga	(w) Forridena	9
14. (*)	QN	MS B VG B			80-85	
	Panicle: length	Panicule : longueur	Rispe: Länge	Panicula: longitud		
	very short	très courte	sehr kurz	muy corta		1
	short	courte	kurz	corta	(s) Kurt, (w) Calvaro	3
	medium	moyenne	mittel	media	(s) Harmony, (w) Balado	5
	long	longue	lang	larga	(s) Canyon, (w) RGT Victorious	7
	very long	très longue	sehr lang	muy larga	(w) Forridena	9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15. (*)	QL VG B		80-92			
	Grain: husk	Grain : enveloppe	Korn: Bespelzung	Grano: cáscara		
	absent	absente	fehlend	ausente	(s) Lennon, (w) Hendon	1
	present	présente	vorhanden	presente	(s) Canyon, (w) Calvaro	9
16.	QL VG A	(+) (a)	80-92			
	Only for varieties with Seed: color of lemma: brown or black: Primary grain: hairiness of back of lemma	Uniquement pour les variétés avec Semence : couleur de la glumelle inférieure Premier grain : pilosité du dos de la glumelle inférieure	Nur für Sorten mit Samen: Farbe der Deckspelze: braun oder schwarz: Korn 1. Ordnung: Behaarung der Rückseite der äußeren Deckspelze	Solo variedades con Semilla: color de la lema: marrón o negro: Grano principal: vellosidad en la parte dorsal de la lema		
	absent	absente	fehlend	ausente	(s) RGT Iliade, (w) Calvaro	1
	present	présente	vorhanden	presente	(s) Rapidena, (w) Black Beauty	9
17.	QN VG A	(+) (a)	80-92			
	Primary grain: hairiness of base	Premier grain : pilosité de la base	Korn 1. Ordnung: Behaarung der Basis	Grano principal: vellosidad de la base		
	absent or weak	absente ou faible	fehlend oder gering	ausente o débil	(s) Canyon, (w) Rhapsody	1
	medium	moyenne	mittel	media	(s) Matty, (s) Stella Doro	3
	strong	forte	stark	fuerte	(s) Agent, (w) Ombrone, (w) Prevision	5
18.	QN VG A	(+) (a)	80-92			
	Primary grain: length of basal hairs	Premier grain : longueurs des poils basaux	Korn 1. Ordnung: Länge der Kornbasis-Härchen	Grano principal: longitud de los pelos basales		
	short	courte	kurz	cortos		1
	medium	moyenne	mittel	medios	(s) Harmony, (w) Black Beauty	3
	long	longue	lang	largos	(s) Everest PZO, (w) Prevision	5
19.	QN VG B	(+) (a)	80-92			
	Primary grain: frequency of awns	Premier grain : fréquence des barbes	Korn 1. Ordnung: Häufigkeit von Grannen	Grano principal: frecuencia de aristas		
	absent or low	nulle ou faible	fehlend oder gering	ausente o baja	(s) Ivory, (w) Calvaro, (w) Rhapsody	1
	medium	moyenne	mittel	media	(s) Ringsaker, (w) Balado, (w) RGT Lineout	3
	high	élevée	hoch	alta	(w) Charming, (w) Ombrone	5

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20.	QN	MG A/MS A		(a)	92			
	Primary grain: length of lemma	Premier grain : longueur de la glumelle inférieure	Korn 1. Ordnung: Länge der äußeren Deckspelze	Grano principal: longitud de la lema				
	very short	très courte	sehr kurz	muy corta	(s) Everest PZO		1	
	short	courte	kurz	corta	(s) Ringsaker, (w) RGT Victorious		3	
	medium	moyenne	mittel	media	(s) Canyon, (w) RGT Lineout		5	
	long	longue	lang	larga	(s) Ivory, (w) Rhapsody		7	
	very long	très longue	sehr lang	muy larga	(s) Harmony, (w) Ombrone		9	
21.	QN	VG A	(+)	(a)	92			
	Primary grain: length of rachilla	Premier grain : longueur du rachis	Korn 1. Ordnung: Länge des Stielchens	Grano principal: longitud de la raquilla				
	short	courte	kurz	corta	(s) Armani, (w) Prevision		1	
	medium	moyenne	mittel	media	(s) Canyon, (w) RGT Lineout		3	
	long	longue	lang	larga	(w) Forridena		5	
22.	(*)	PQ	VG	(+)				
	Seasonal type	Type de développement	Pflanze: Wechselverhalten	Tipo de desarrollo				
	winter type	type hiver	Wintertyp	tipo de invierno	(w) Balado, (w) RGT Lineout		1	
	alternative type	type alternatif	Wechselform	tipo alternativo	(w) Forridena		2	
	spring type	type printemps	Sommertyp	tipo de primavera	(s) Harmony, (s) Stella Doro		3	

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

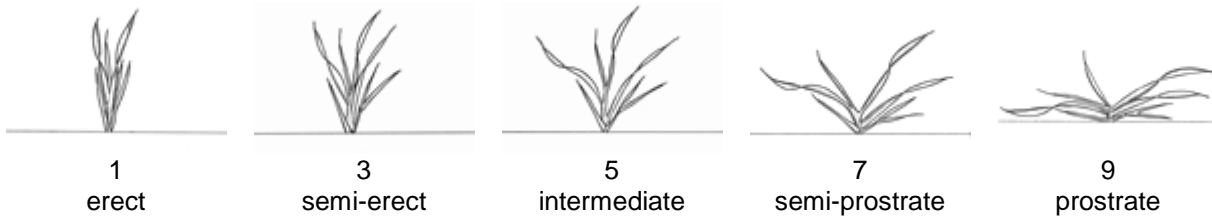
Characteristics containing the following key in the Table of Characteristics should be examined as indicated below:

- (a) Characteristics which should be observed on *Avena sativa* L. only.

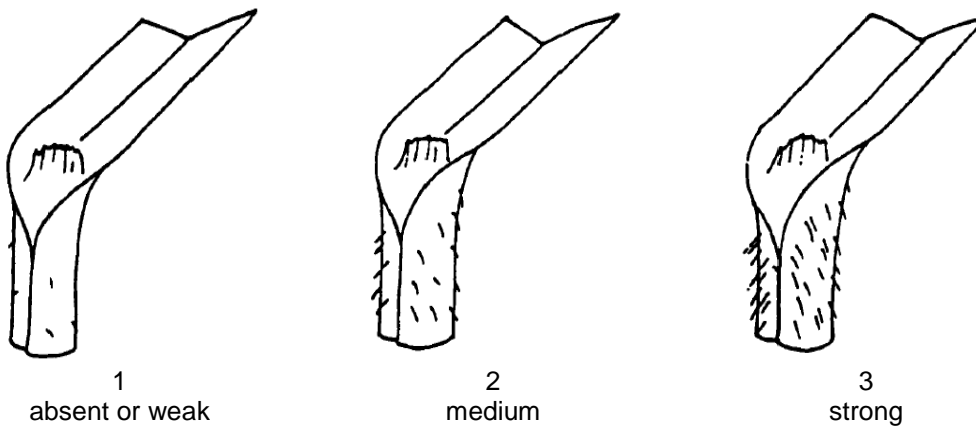
8.2 *Explanations for individual characteristics*

Ad. 2: 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.

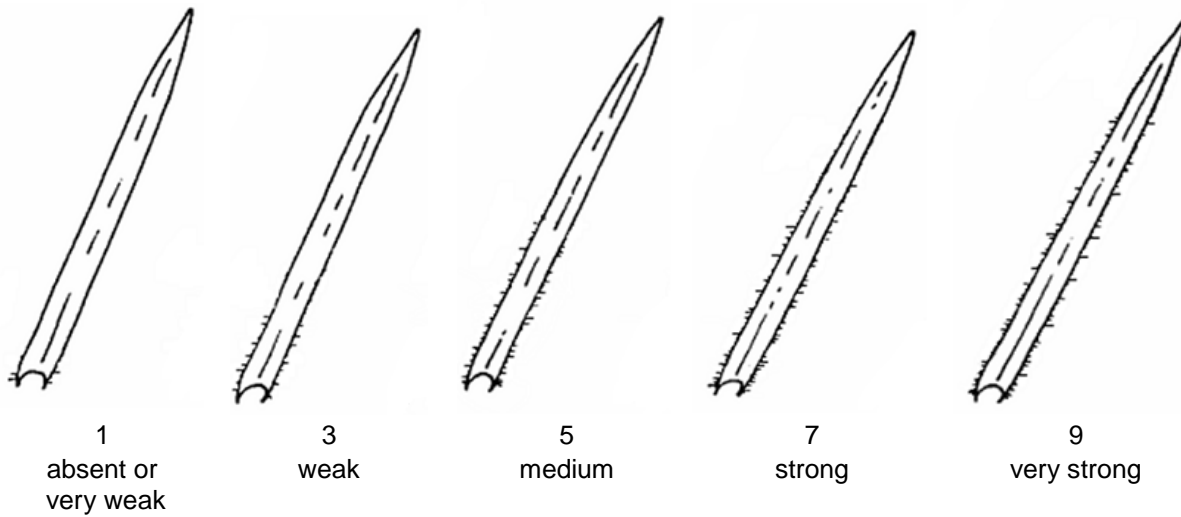


Ad. 3: Lowest leaves: hairiness of sheaths



Ad. 4: Leaf blade: hairiness of margins

To be recorded on the leaf where the strongest expression is observed.



Ad. 5: Plant: frequency of plants with recurved flag leaves

1 (absent or very low): all or almost all flag leaves are rectilinear

3 (low): about 1/4 of the plants with recurved flag leaves

5 (medium): about 1/2 of the plants with recurved flag leaves

7 (high): about 3/4 of the plants with recurved flag leaves

9 (very high): almost all or all flag leaves are recurved

Ad. 6: Time of panicle emergence

Time of panicle emergence is reached when the first spikelet is visible on 50% of panicles.

Ad. 7: Stem: hairiness of uppermost node



1
absent or
very weak



3
weak



5
medium



7
strong



9
very strong

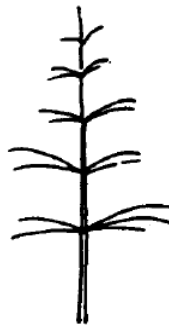
Ad. 10: Panicle: attitude of branches



1
erect



2
semi-erect



3
horizontal



4
semi-drooping

Ad. 12: Primary grain: glaucosity of lemma

Observation should reflect intensity and area of glaucosity.

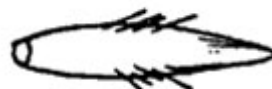
Ad. 13: Plant: length

Plant length includes stem, panicle and awns (if present).

Ad. 16: Only for varieties with Seed: color of lemma: brown or black: Primary grain: hairiness of back of lemma



1
absent



9
present

Ad. 17: Primary grain: hairiness of base



1
absent or weak



3
medium



5
strong

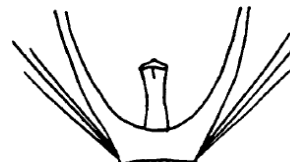
Ad. 18: Primary grain: length of basal hairs



1
short



3
medium



5
long

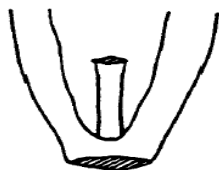
Ad. 19: Primary grain: frequency of awns

The mean number of awned grains in the panicle should be observed.

Ad. 21: Primary grain: length of rachilla



1
short



3
medium



5
long

Ad. 22: Seasonal type

The seasonal type (need of vernalization) should be assessed on plots sown in springtime. Example varieties should always be included in the trial. When the example varieties behave according to its description, candidate varieties can be described. At the time when the latest spring type variety is fully mature (stage 91/92 of the Zadoks decimal code) growth stage reached by the respective variety should be assessed. The states of expression are defined as follows:

Winter type (high need of vernalization): the plants have reached stage 45 of the Zadoks decimal code (boots swollen) at maximum.

Alternative type (partial need of vernalization): the plants have exceeded stage 45 of the Zadoks decimal code (as a rule they have exceeded stage 75) and have reached stage 90 at maximum.

Spring type (no need or very weak need of vernalization): the plants have exceeded stage 90 of the Zadoks decimal code.

Seasonal type is not related to winter hardiness. Spring type varieties have no need for vernalization but may have winter hardiness.

8.3 *The descriptions of the growth stages of the Zadoks decimal code for cereals (ZADOKS et al., 1974)*

Zadoks Decimal code	Description	Zadoks Decimal code	Description
	<u>Germination</u>		<u>Booting</u>
00	Dry seed	41	Flag leaf sheath extending
01	Start of imbibition	43	Boots just visibly swollen
03	Imbibition complete	45	Boots swollen
05	Radicle emerged from seed	47	Flag leaf sheath opening
07	Coleoptile emerged from seed	49	First awns visible
09	Leaf just at coleoptile tip		<u>Inflorescence emergence</u>
	<u>Seedling growth</u>	50	First spikelet of inflorescence visible
10	First leaf through coleoptile	53	1/4 of inflorescence emerged
11	First leaf unfolded	55	1/2 of inflorescence emerged
12	2 leaves unfolded	57	3/4 of inflorescence emerged
13	3 leaves unfolded	59	Emergence of inflorescence completed
14	4 leaves unfolded		<u>Anthesis</u>
15	5 leaves unfolded	60	Beginning on anthesis
16	6 leaves unfolded	65	Anthesis half-way
17	7 leaves unfolded	69	Anthesis completed
18	8 leaves unfolded		<u>Milk development</u>
19	9 or more leaves unfolded	71	Caryopses watery ripe
	<u>Tillering</u>	73	Early milk
20	Main shoot only	75	Medium milk
21	Main shoot and 1 tiller	77	Late milk
22	Main shoot and 2 tillers		<u>Dough development</u>
23	Main shoot and 3 tillers	83	Early dough
24	Main shoot and 4 tillers	85	Soft dough
25	Main shoot and 5 tillers	87	Hard dough
26	Main shoot and 6 tillers		<u>Ripening</u>
27	Main shoot and 7 tillers	91	Caryopses hard (difficult to divide with thumbnail)
28	Main shoot and 8 tillers	92	Caryopses hard (can no longer be dented with thumbnail)
29	Main shoot and 9 or more tillers	93	Caryopses loosening in daytime
	<u>Stem elongation</u>	94	Overripe, straw dead and collapsing
30	Pseudo stem erection	95	Seed dormant
31	1st node detectable	96	Viable seed giving 50% germination
32	2nd node detectable	97	Seed not dormant
33	3rd node detectable	98	Secondary dormancy induced
34	4th node detectable	99	Secondary dormancy lost
35	5th node detectable		
36	6th node detectable		
37	Flag leaf just visible		
39	Flag leaf ligule/collar just visible		

9. Literature

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

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Application date: (not to be filled in by the applicant)
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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 []

1.1.2 Common name

1.2.1 Botanical name []

1.2.2 Common name

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

#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)

(.....) x (.....)
female parent male parent

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

(.....) x (.....)
female parent male parent

- (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)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

(a) Self-pollination []

(b) Other (please provide details) []

4.2.2 Other []
(Please provide details)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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 Seed: color of lemma (1)		
white	(s) Harmony, (w) Gerald, (w) RGT Lineout	1 []
yellow	(s) Canyon, (w) Mascani, (w) Rhapsody	2 []
brown	(s) Everest PZO, (w) Prevision	3 []
black	(s) RGT Iliade, (w) Calvaro	4 []
5.2 Leaf blade: hairiness of margins (4)		
absent or very weak	(s) Harmony, (w) Flavia	1 []
very weak to weak		2 []
weak	(s) WPB Elyann, (w) Calvaro	3 []
weak to medium		4 []
medium	(s) Armani, (w) Black Beauty	5 []
medium to strong		6 []
strong	(s) Stella Doro, (w) Ombrone	7 []
strong to very strong		8 []
very strong	(w) Charming, (w) RGT Lineout	9 []
5.3 Time of panicle emergence (6)		
very early	(s) Rapidena	1 []
very early to early		2 []
early	(s) Stella Doro, (w) Prevision	3 []
early to medium		4 []
medium	(s) Ivory, (w) Ombrone	5 []
medium to late		6 []
late	(w) Forridena	7 []
late to very late		8 []
very late	(s) Everest PZO, (w) Gerald	9 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
5.4 Stem: hairiness of uppermost node (7)		
absent or very weak	(s) Canyon, (w) Calvaro	1 []
very weak to weak		2 []
weak	(s) Anchuela	3 []
weak to medium		4 []
medium	(w) Flavia	5 []
medium to strong		6 []
strong	(w) Forridena, (w) Mascani	7 []
strong to very strong		8 []
very strong	(s) Kankan	9 []
5.5 Glume: glaucosity (9)		
absent or very weak	(s) Rapidena	1 []
very weak to weak		2 []
weak	(s) Canyon, (w) Hendon	3 []
weak to medium		4 []
medium	(s) Harmony, (w) RGT Victorious	5 []
medium to strong		6 []
strong	(s) Komfort, (w) Black Beauty	7 []
strong to very strong		8 []
very strong	(s) Odal	9 []
5.6 Plant: length (13)		
very short	(w) Balado, (w) Hendon	1 []
very short to short		2 []
short	(s) Kurt, (s) Rapidena	3 []
short to medium		4 []
medium	(s) Armani, (w) Mascani	5 []
medium to long		6 []
long	(s) Canyon	7 []
long to very long		8 []
very long	(w) Forridena	9 []
5.7 Grain: husk (15)		
absent	(s) Lennon, (w) Hendon	1 []
present	(s) Canyon, (w) Calvaro	9 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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S	Characteristics	Example Varieties	Note
5.8 (22)	Seasonal type		
	winter type	(w) Balado, (w) RGT Lineout	1 []
	alternative type	(w) Forridena	2 []
	spring type	(s) Harmony, (s) Stella Doro	3 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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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
<i>Example</i>	<i>Leaf blade: hairiness of margins</i>	<i>very weak to weak</i>	<i>medium</i>
Comments:			

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#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	<input type="checkbox"/>	No <input type="checkbox"/>
	(If yes, please provide details)		
7.2	Are there any special conditions for growing the variety or conducting the examination?		
	Yes	<input type="checkbox"/>	No <input type="checkbox"/>
	(If yes, please provide details)		
7.3	Other information		

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