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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

TIMOTHY

UPOV Code(s): PHLEU_BER; PHLEU_PRA

Phleum nodosum L.;
Phleum pratense L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Slovakia

to be considered by the
Technical Committee at its fifty-sixth session
to be held in Geneva on October 26 and 27, 2020

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Phleum nodosum L., *Phleum bertolonii* DC., *Phleum pratense* subsp. *bertolonii* (DC.) Bornm., *Phleum pratense* subsp. *nodosum* (L.) Domin, *Phleum pratense* var. *nodosum* (L.) Huds.	Diploid Timothy, Small Timothy, Smaller Cat's-tail, Timothy, Turf Timothy	Fléole diploïde, Petite fléole	Zwiebellieschgras	Fleo
Phleum pratense L., *Phleum intermedium* Jord., *Phleum parnassicum* Boiss., nom. nud.	Meadow cat's-tail, Timothy	Fléole des prés	Timothe, Wiesenlieschgras	Fleo de los prados

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 *Phleum nodosum* L. and *Phleum pratense* 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 seeds.

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

500 g of seed

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority.

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.

3.1.2 The two independent growing cycles should be in the form of two separate plantings.

3.1.3 The testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.

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.

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

A: Spaced plants
B: Row plots

3.4 Test Design

3.4.1 Spaced plants: Each test should be designed to result in at least 60 plants, which should be divided between at least 2 replicates.

3.4.2 Row plots: Each test should be designed to result in at least 200 plants, which should be divided between at least 2 replicates.

3.4.3 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.

3.4.4 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 60 plants or parts of plants taken from each of 60 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 cross-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 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 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) Plant: time of inflorescence emergence after vernalization (characteristic 9)
(b) Stem: length (characteristic 13)

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten 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)-(c) 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: spaced plants
B: row plot

If more than one type of plot is indicated for a specific characteristic, the examination office has to choose the most appropriate plot type under its conditions. The characteristic should not be assessed twice.

P.p. - *Phleum pratense*
P.n. - *Phleum nodosum*

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**		**20-29**			
	Leaf: intensity of green color without vernalization	**Feuille : intensité de la couleur verte sans vernalisation**	**Blatt: Intensität der Grünfärbung ohne Vernalisation**	**Hoja: intensidad del color verde sin vernalización**		
	light	claire	hell	clara		3
	medium	moyenne	mittel	media	Presto (P.p.)	5
	dark	foncée	dunkel	oscura	Teno (P.n.)	7
2.	**QN VG|B/VS|A**	**(a)**	**20-29**			
	Plant: growth habit without vernalization	**Plante : port sans vernalisation**	**Pflanze: Wuchsform ohne Vernalisation**	**Planta: hábito de crecimiento sin vernalización**		
	erect	dressé	aufrecht	erecto		1
	semi-erect	demi-dressé	halbaufrecht	semierecto	Aturo (P.p.)	3
	intermediate	intermédiaire	mittel	intermedio	Dolina (P.p.)	5
	semi-prostrate	semi-étalé	halbliegend	semipostrado	Alma (P.p.)	7
	prostrate	étalé	liegend	postrado		9
3.	**QN MG|B/VG|B**		**20-29**			
	Plant: natural height without vernalization	**Plante : hauteur naturelle sans vernalisation**	**Pflanze: natürliche Höhe ohne Vernalisation**	**Planta: altura sin vernalización**		
	very short	très courte	sehr niedrig	muy baja	Latima (P.n.)	1
	short	courte	niedrig	baja		3
	medium	moyenne	mittel	media	Barpenta (P.p.), Vega (P.p.)	5
	tall	haute	hoch	alta	Rubato (P.p.)	7
	very tall	très haute	sehr hoch	muy alta		9
4.	**QN MS|A/VG|B**	**(+)**				
	Plant: time of inflorescence emergence without vernalization	**Plante : époque d'épiaison sans vernalisation**	**Pflanze: Zeitpunkt des Erscheinens des Blütenstands ohne Vernalisation**	**Planta: época de emergencia de las inflorescencias sin vernalización**		
	very early	très précoce	sehr früh	muy temprana	Vähäsöyrinki (P.p.)	1
	early	précoce	früh	temprana	Rhonia (P.p.), Saga (P.p.)	3
	medium	moyenne	mittel	media	Rasant (P.p.), Teicis (P.p.)	5
	late	tardive	spät	tardía	Rubato (P.p.)	7
	very late	très tardive	sehr spät	muy tardía		9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.		**QN VG|B/VS|A**		**20-39**			
		Leaf: intensity of green color <u>after</u> vernalization	**Feuille : intensité de la couleur verte <u>après</u> vernalisation**	**Blatt: Intensität der Grünfärbung <u>nach der</u> Vernalisation**	**Hoja: intensidad del color verde <u>después de la</u> vernalización**		
		light	claire	hell	clara		3
		medium	moyenne	mittel	media	Aturo (P.p.)	5
		dark	foncée	dunkel	oscura	Latima (P.n.)	7
6.		**QN VG|B/VS|A**	**(a)**	**20-39**			
		Plant: growth habit <u>after</u> vernalization	**Plante : port <u>après</u> vernalisation**	**Pflanze: Wuchsform <u>nach der</u> Vernalisation**	**Planta: hábito de crecimiento <u>después de la</u> vernalización**		
		erect	dressé	aufrecht	erecto		1
		semi-erect	demi-dressé	halbaufrecht	semierecto	Phlewiola (P.p.)	3
		intermediate	intermédiaire	mittel	intermedio	Presto (P.p.), Teno (P.n.)	5
		semi-prostrate	semi-étalé	halbliegend	semipostrado		7
		prostrate	étalé	liegend	postrado	Latima (P.n.)	9
7.	**(*)**	**QN MS|A/VG|B**		**20-39**			
		Plant: natural height <u>after</u> vernalization	**Plante : hauteur naturelle <u>après</u> vernalisation**	**Pflanze: natürliche Höhe <u>nach der</u> Vernalisation**	**Planta: altura <u>después de la</u> vernalización**		
		very short	très courte	sehr niedrig	muy baja	Latima (P.n.)	1
		short	courte	niedrig	baja	Vähäsöyrinki (P.p.)	3
		medium	moyenne	mittel	media	Barmidi (P.p.)	5
		tall	haute	hoch	alta	Prometheus (P.p.), Rasant (P.p.)	7
		very tall	très haute	sehr hoch	muy alta		9
8.		**QN VG|B**		**20-39**			
		Leaf: width	**Feuille : largeur**	**Blatt: Breite**	**Hoja: anchura**		
		narrow	étroite	schmal	estrecha	Teno (P.n.)	3
		medium	moyenne	mittel	media	Dolina (P.p.)	5
		broad	large	breit	ancha	Varis (P.p.)	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9.	**(*)** **QN** **MS|A**		**(+)**				
		Plant: time of inflorescence emergence <u>after</u> vernalization	**Plante : époque d'épiaison <u>après</u> vernalisation**	**Pflanze: Zeitpunkt des Erscheinens des Blütenstandes <u>nach der</u> Vernalisation**	**Planta: época de emergencia de las inflorescencias <u>después de la</u> vernalización**		
		very early	très précoce	sehr früh	muy temprana	Tiller (P.p.)	1
		early	précoce	früh	temprana	Phlewiola (P.p.), Teno (P.n.)	3
		medium	moyenne	mittel	media	Vähäsöyrinki (P.p.)	5
		late	tardive	spät	tardía	Adrienne (P.p.)	7
		very late	très tardive	sehr spät	muy tardía	Aberystwyth S48 (P.p.)	9
10.	**(*)** **QN** **MS|A**		**(b)**	**50-56**			
		Flag leaf: length	**Dernière feuille : longueur**	**Fahnenblatt: Länge**	**Hoja bandera: longitud**		
		very short	très courte	sehr kurz	muy corta	Teno (P.n.)	1
		short	courte	kurz	corta		3
		medium	moyenne	mittel	media	Grindstad (P.p.)	5
		long	longue	lang	larga	Erecta (P.p.)	7
		very long	très longue	sehr lang	muy larga		9
11.	**(*)** **QN** **MS|A**		**(b)**	**50-56**			
		Flag leaf: width	**Dernière feuille : largeur**	**Fahnenblatt: Breite**	**Hoja bandera: anchura**		
		very narrow	très étroite	sehr schmal	muy estrecha		1
		narrow	étroite	schmal	estrecha		3
		medium	moyenne	mittel	media	Tiller (P.p.)	5
		broad	large	breit	ancha	KIS Muri (P.p.)	7
		very broad	très large	sehr breit	muy ancha		9
12.	**QN** **MS|A**		**(b)**	**50-56**			
		Flag leaf: length/width ratio	**Dernière feuille : rapport longueur/largeur**	**Fahnenblatt: Verhältnis Länge/Breite**	**Hoja bandera: relación entre la longitud y la anchura**		
		very low	très bas	sehr klein	muy baja		1
		low	bas	klein	baja	Teno (P.n.)	3
		medium	moyen	mittel	media	Saga (P.p.)	5
		high	élevé	groß	alta	Dolina (P.p.)	7
		very high	très élevé	sehr groß	muy alta		9

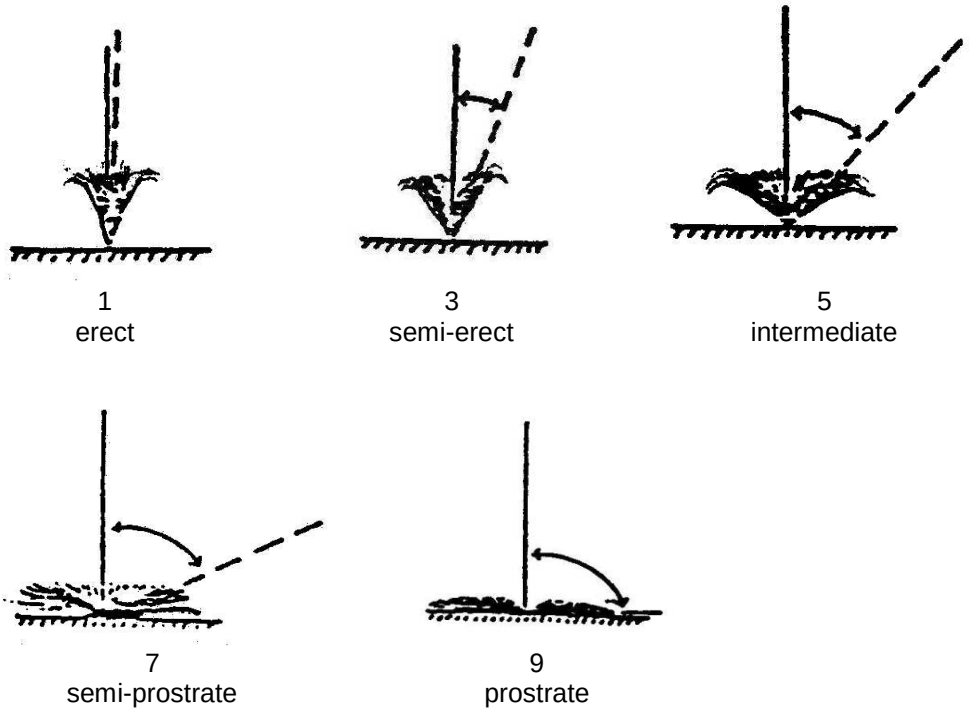
		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
13.	**(*)**	**QN MS|A**	**(+) (c)**	**60-68**			
		Stem: length	**Tige : longueur**	**Halm: Länge**	**Tallo: longitud**		
		very short	très courte	sehr kurz	muy corta		1
		short	courte	kurz	corta		3
		medium	moyenne	mittel	media	Vähäsöyrinki (P.p.)	5
		long	longue	lang	larga	Dolina (P.p.)	7
		very long	très longue	sehr lang	muy larga		9
14.	**(*)**	**QN MS|A**	**(c)**	**60-68**			
		Stem: length of upper internode	**Tige : longueur du dernier entrenœud**	**Halm: Länge des obersten Internodiums**	**Tallo: longitud del entrenudo superior**		
		very short	très court	sehr kurz	muy corta		1
		short	court	kurz	corta	Latima (P.n.)	3
		medium	moyen	mittel	media	Aturo (P.p.)	5
		long	long	lang	larga	Aurora (P.p.)	7
		very long	très long	sehr lang	muy larga		9
15.	**(*)**	**QN MS|A**	**(c)**	**60-68**			
		Inflorescence: length	**Inflorescence : longueur**	**Blütenstand: Länge**	**Inflorescencia: longitud**		
		very short	très courte	sehr kurz	muy corta		1
		short	courte	kurz	corta	Teno (P.n.)	3
		medium	moyenne	mittel	media	Phlewiola (P.p.)	5
		long	longue	lang	larga	Aurora (P.p.)	7
		very long	très longue	sehr lang	muy larga		9
16.		**QN VG|B**					
		Plant: tendency to form inflorescences in aftermath	**Plante : tendance à former des inflorescences après-coup**	**Pflanze: Neigung zur Bildung von Blütenständen nach dem Schnitt**	**Planta: tendencia a formar inflorescencias después del corte**		
		very weak	très faible	sehr gering	muy débil	Vega (P.p.)	1
		weak	faible	gering	débil	Anjo (P.p.), Tryggve (P.p.)	3
		medium	moyenne	mittel	media	Rubato (P.p.)	5
		strong	forte	stark	fuerte	Timola (P.p.)	7
		very strong	très forte	sehr stark	muy fuerte		9

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) The growth habit should be assessed 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.



1
erect

3
semi-erect

5
intermediate

7
semi-prostrate

9
prostrate

(b) The flag leaf is the first true leaf at the top of the stem which is visible at the time of inflorescence emergence and has a sheath enclosing the stem.

In some cases, a small bract-like leaf which has a very short sheath, ligule and blade develops at the base of the inflorescence. This leaf is not visible at the time of inflorescence emergence but only when the inflorescence fully emerged. It generally does not have a normal sheath clasping the stem. This bract-like leaf is not to be considered as a flag leaf.

(c) The observations should be made when inflorescence is fully expanded.

8.2 Explanations for individual characteristics

Ad. 4: Plant: time of inflorescence emergence without vernalization

1st observation: - when approximately 20% of the plants of the earliest heading variety have emerged
- Date 1 for plants with emerged inflorescences

2nd observation: - 1-2 weeks after first observation (weather dependent)
- Date 2 for plants with emerged inflorescences

3rd observation: - 1-2 weeks after second observation (weather dependent)
- Date 3 for plants with emerged inflorescences

Date 4 for those other plants which have not emerged in any one of the three observations.

From this data a mean date per variety is calculated.

Ad. 9: Plant: time of inflorescence emergence after vernalization

The date of inflorescence emergence of each single plant should be assessed at least twice a week. A single plant is considered to have headed when the tip of three inflorescences can be seen protruding from the flag leaf sheath. From the single plant data a mean date per plot and a mean date per variety is calculated.

Ad. 13: Stem: length

The longest stem should be observed including inflorescence.

8.3 Growth stages for grasses

All characteristics should be recorded at the appropriate time for the plant concerned. Growth stages of grasses are indicated by decimal codes which are 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 or 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

Meier, U., 1997: Growth stages of mono- and dicotyledonous plants. BBCH-Monograph Blackwell Science. Berlin, Vienna

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

1.1.1	Botanical name	*Phleum nodosum* L.	[ ]
1.1.2	Common name	Diploid Timothy, Small Timothy, Smaller Cat's-tail, Timothy, Turf Timothy	
1.2.1	Botanical name	*Phleum pratense* L.	[ ]
1.2.2	Common name	Meadow cat's-tail, Timothy	

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 variety)

(……..……..…) 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)

Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

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

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

(a) Cross-pollination [ ]
(b) Other (please provide details) [ ]

4.2.2 Other [ ]
(Please provide details)

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 (9)	**Plant: time of inflorescence emergence <u>after</u> vernalization**		
	very early	Tiller (P.p.)	1 [ ]
	very early to early		2 [ ]
	early	Phlewiola (P.p.), Teno (P.n.)	3 [ ]
	early to medium		4 [ ]
	medium	Vähäsöyrinki (P.p.)	5 [ ]
	medium to late		6 [ ]
	late	Adrienne (P.p.)	7 [ ]
	late to very late		8 [ ]
	very late	Aberystwyth S48 (P.p.)	9 [ ]
5.2 (10)	**Flag leaf: length**		
	very short	Teno (P.n.)	1 [ ]
	very short to short		2 [ ]
	short		3 [ ]
	short to medium		4 [ ]
	medium	Grindstad (P.p.)	5 [ ]
	medium to long		6 [ ]
	long	Erecta (P.p.)	7 [ ]
	long to very long		8 [ ]
	very long		9 [ ]
5.3 (11)	**Flag leaf: width**		
	very narrow		1 [ ]
	very narrow to narrow		2 [ ]
	narrow		3 [ ]
	narrow to medium		4 [ ]
	medium	Tiller (P.p.)	5 [ ]
	medium to broad		6 [ ]
	broad	KIS Muri (P.p.)	7 [ ]
	broad to very broad		8 [ ]
	very broad		9 [ ]

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

	Characteristics	Example Varieties	Note
5.4 (13)	**Stem: length**		
	very short		1 [ ]
	very short to short		2 [ ]
	short		3 [ ]
	short to medium		4 [ ]
	medium	Vähäsöyrinki (P.p.)	5 [ ]
	medium to long		6 [ ]
	long	Dolina (P.p.)	7 [ ]
	long to very long		8 [ ]
	very long		9 [ ]

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	*Flag leaf: length*	*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 Other information

7.3.1 Ploidy
diploid [ ]
hexaploid [ ]

7.3.2 Resistance to pests and diseases

.....

7.3.3 Other

.....

Authorities may allow certain of this information to be provided 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]