



TG/5/8

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## INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

## RED CLOVER\*

UPOV Code(s):

TRFOL\_PRA

*Trifolium pratense* 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>Trifolium pratense</i> L.	Red Clover	Trèfle violet	Rotklee	Trébol rojo, Trébol violeta

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](http://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 *Trifolium 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 reference in the Table of Characteristics. The stages of development denoted by each reference are described in Chapter 8.3.

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  
C: special tests

3.4 *Test Design*

3.4.1 Spaced plants: Each test should be designed to result in a total of at least 60 plants, which should be divided between at least 3 replicates.

3.4.2 Row plots: Each test should be designed to result in a total of at least 3000 plants, which should be divided between at least 2 replicates.

3.4.3 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: ploidy (characteristic 1)
- (b) Time of flowering (characteristic 15)
- (c) Stem: length (characteristic 16)

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 All relevant states of expression are presented in the characteristic.

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		
	<b>Name of characteristics in English</b>			<b>Nom du caractère en français</b>		<b>Name des Merkmals auf Deutsch</b>		<b>Nombre del carácter en español</b>
	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)-(b) 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

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

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>1. (*)</b>	<b>QL</b>	<b>MG C</b>	<b>(+)</b>			
	<b>Plant: ploidy</b>	<b>Plante : ploïdie</b>	<b>Pflanze: Ploidie</b>	<b>Planta: ploidía</b>		
	diploid	diploïde	diploid	diploïde	Start	2
	tetraploid	tétraploïde	tetraploid	tetraploïde	Titus	4
<b>2.</b>	<b>QN</b>	<b>MS C</b>	<b>(+)</b>	<b>11</b>		
	<b>Cotyledon: length</b>	<b>Cotylédón : longueur</b>	<b>Keimblatt: Länge</b>	<b>Cotiledón: longitud</b>		
	short	courte	kurz	corta		1
	short to medium	courte à moyenne	kurz bis mittel	corta a media		2
	medium	moyenne	mittel	media	Agil, Temara	3
	medium to long	moyenne à longue	mittel bis lang	media a larga		4
	long	longue	lang	larga	Atlantis, Maro	5
<b>3.</b>	<b>QN</b>	<b>MS C</b>	<b>(+)</b>	<b>11</b>		
	<b>Cotyledon: width</b>	<b>Cotylédón : largeur</b>	<b>Keimblatt: Breite</b>	<b>Cotiledón: anchura</b>		
	narrow	étroite	schmal	estrecha	Vltavín, Lemmon	1
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media		2
	medium	moyenne	mittel	media	Renegade, Temara	3
	medium to broad	moyenne à large	mittel bis breit	media a ancha		4
	broad	large	breit	ancha	Maro	5
<b>4. (*)</b>	<b>QN</b>	<b>VG C</b>		<b>13-19</b>		
	<b>Petiole: density of hairs</b>	<b>Pétiole : densité de la pilosité</b>	<b>Blattstiel: Dichte der Behaarung</b>	<b>Pecíolo: densidad de la vellosidad</b>		
	sparse	lâche	locker	escasa	Lucrum	1
	sparse to medium	lâche à moyenne	locker bis mittel	escasa a media		2
	medium	moyenne	mittel	media	Formica	3
	medium to dense	moyenne à dense	mittel bis dicht	media a densa		4
	dense	dense	dicht	densa	Grasslands Pawera	5



	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>5.</b>	<b>QN</b>	<b>MG B/VG B</b>		<b>29</b>		
	<b>Plant: natural height <u>without</u> vernalization</b>	<b>Plante : hauteur naturelle <u>sans</u> vernalisation</b>	<b>Pflanze: natürliche Höhe <u>ohne</u> Vernalisation</b>	<b>Planta: altura natural <u>sin</u> vernalización</b>		
	very short	très basse	sehr niedrig	muy baja		1
	very short to short	très basse à basse	sehr niedrig bis niedrig	muy baja a baja		2
	short	basse	niedrig	baja		3
	short to medium	basse à moyenne	niedrig bis mittel	baja a media		4
	medium	moyenne	mittel	media	Lucrum	5
	medium to tall	moyenne à haute	mittel bis hoch	media a alta		6
	tall	haute	hoch	alta	Formica	7
	tall to very tall	haute à très haute	hoch bis sehr hoch	alta a muy alta		8
	very tall	très haute	sehr hoch	muy alta		9
<b>6.</b>	<b>QN</b>	<b>VG B</b>		<b>29</b>		
	<b>Leaf: intensity of green color <u>without</u> vernalization</b>	<b>Feuille : intensité de la couleur verte <u>sans</u> vernalisation</b>	<b>Blatt: Intensität der Grünfärbung <u>ohne</u> Vernalisation</b>	<b>Hoja: intensidad del color verde <u>sin</u> vernalización</b>		
	very light	très claire	sehr hell	muy clara		1
	very light to light	très claire à claire	sehr hell bis hell	muy clara a clara		2
	light	claire	hell	clara	Kenland	3
	light to medium	claire à moyenne	hell bis mittel	clara a media		4
	medium	moyenne	mittel	media	Rotra	5
	medium to dark	moyenne à foncée	mittel bis dunkel	media a oscura		6
	dark	foncée	dunkel	oscura	Tedi	7
	dark to very dark	foncée à très foncée	dunkel bis sehr dunkel	oscura a muy oscura		8
	very dark	très foncée	sehr dunkel	muy oscura		9
<b>7. (*)</b>	<b>QN</b>	<b>VS A</b>	<b>(+)</b>	<b>29</b>		
	<b>Plant: growth habit</b>	<b>Plante : port</b>	<b>Pflanze: Wuchsform</b>	<b>Planta: hábito de crecimiento</b>		
	erect	dressé	aufrecht	erecto		1
	erect to semi-erect	dressé à demi-dressé	aufrecht bis halbaufrecht	erecto a semierecto		2
	semi-erect	demi-dressé	halbaufrecht	semierecto		3
	semi-erect to intermediate	demi-dressé à intermédiaire	halbaufrecht bis mittel	semierecto a intermedio		4
	intermediate	intermédiaire	mittel	intermedio		5
	intermediate to semi-prostrate	intermédiaire à demi-étalé	mittel bis halbliegend	intermedio a semiprostrado		6
	semi-prostrate	demi-étalé	halbliegend	semiprostrado	Rotra, Formica	7
	semi-prostrate to prostrate	demi-étalé à étalé	halbliegend bis liegend	semiprostrado a prostrado		8
	prostrate	étalé	liegend	prostrado	Montana	9

	English	français	deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
<b>8.</b>	<b>QN</b>	<b>VG B VS A</b>	<b>(+)</b>			
	<b>Plant: tendency to flower <u>without</u> vernalization</b>	<b>Plante : tendance à la floraison <u>sans</u> vernalisation</b>	<b>Pflanze: Neigung zur Blütenbildung <u>ohne</u> Vernalisation</b>	<b>Planta: tendencia a la floración <u>sin</u> vernalización</b>		
	very weak	très faible	sehr gering	muy débil		1
	very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil		2
	weak	faible	gering	débil	Rajah	3
	weak to medium	faible à moyenne	gering bis mittel	débil a media		4
	medium	moyenne	mittel	media	Podjavorina, Cyklon	5
	medium to strong	moyenne à forte	mittel bis stark	media a fuerte		6
	strong	forte	stark	fuerte	Formica	7
	strong to very strong	forte à très forte	stark bis sehr stark	fuerte a muy fuerte		8
	very strong	très forte	sehr stark	muy fuerte		9
<b>9. (*)</b>	<b>QN</b>	<b>VG B VS A</b>		<b>29</b>		
	<b>Leaf: conspicuousness of marking</b>	<b>Feuille : netteté des ornements</b>	<b>Blatt: Ausprägung der Zeichnung</b>	<b>Hoja: visibilidad de la mancha</b>		
	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil		1
	very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil		2
	weak	faible	gering	débil		3
	weak to medium	faible à moyenne	gering bis mittel	débil a media		4
	medium	moyenne	mittel	media	Lucrum	5
	medium to strong	moyenne à forte	mittel bis stark	media a fuerte		6
	strong	forte	stark	fuerte	Astur, Temara	7
	strong to very strong	forte à très forte	stark bis sehr stark	fuerte a muy fuerte		8
	very strong	très forte	sehr stark	muy fuerte		9
<b>10. (*)</b>	<b>QN</b>	<b>MG B MS A/ VG B</b>		<b>31-39</b>		
	<b>Plant: natural height <u>after</u> vernalization</b>	<b>Plante : hauteur naturelle <u>après</u> vernalisation</b>	<b>Pflanze: natürliche Höhe <u>nach</u> Vernalisation</b>	<b>Planta: altura natural <u>después de la</u> vernalización</b>		
	very short	très basse	sehr niedrig	muy baja		1
	very short to short	très basse à basse	sehr niedrig bis niedrig	muy baja a baja		2
	short	basse	niedrig	baja		3
	short to medium	basse à moyenne	niedrig bis mittel	baja a media		4
	medium	moyenne	mittel	media	Lucrum	5
	medium to tall	moyenne à haute	mittel bis hoch	media a alta		6
	tall	haute	hoch	alta	Manuela, Tedi	7
	tall to very tall	haute à très haute	hoch bis sehr hoch	alta a muy alta		8
	very tall	très haute	sehr hoch	muy alta		9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>11. (*)</b>	<b>QN</b>	<b>VG B</b>				
			<b>31-39</b>			
	<b>Leaf: intensity of green color <u>after</u> vernalization</b>	<b>Feuille : intensité de la couleur verte <u>après</u> vernalisation</b>	<b>Blatt: Intensität der Grünfärbung <u>nach</u> Vernalisation</b>	<b>Hoja: intensidad del color verde <u>después</u> de la vernalización</b>		
	very light	très claire	sehr hell	muy clara		1
	very light to light	très claire à claire	sehr hell bis hell	muy clara a clara		2
	light	claire	hell	clara	Renegade	3
	light to medium	claire à moyenne	hell bis mittel	clara a media		4
	medium	moyenne	mittel	media	Montana, Freedom	5
	medium to dark	moyenne à foncée	mittel bis dunkel	media a oscura		6
	dark	foncée	dunkel	oscura	Astur, Grasslands Turoa, Lucrum	7
	dark to very dark	foncée à très foncée	dunkel bis sehr dunkel	oscura a muy oscura		8
	very dark	très foncée	sehr dunkel	muy oscura		9
<b>12.</b>	<b>QN</b>	<b>MS A</b>	<b>(+)</b>	<b>(b)</b>		
			<b>31-69</b>			
	<b>Leaf: length of petiole</b>	<b>Feuille : longueur du pétiole</b>	<b>Blatt: Länge des Blattstiels</b>	<b>Hoja: longitud del peciolo</b>		
	very short	très courte	sehr kurz	muy corta		1
	short	courte	kurz	corta		2
	medium	moyenne	mittel	media	Metis	3
	long	longue	lang	larga	Formica	4
	very long	très longue	sehr lang	muy larga		5
<b>13. (*)</b>	<b>QN</b>	<b>MS A</b>		<b>(b)</b>		
			<b>31-69</b>			
	<b>Middle leaflet: length</b>	<b>Foliole du milieu : longueur</b>	<b>Mittlere Blattfieder: Länge</b>	<b>Folículo central: longitud</b>		
	very short	très courte	sehr kurz	muy corta		1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta		2
	short	courte	kurz	corta	Tuscan	3
	short to medium	courte à moyenne	kurz bis mittel	corta a media		4
	medium	moyenne	mittel	media	Astur, Vltavín	5
	medium to long	moyenne à longue	mittel bis lang	media a larga		6
	long	longue	lang	larga		7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga		8
	very long	très longue	sehr lang	muy larga		9

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>14. (*)</b>	<b>QN</b>	<b>MSJA</b>	<b>(b)</b>	<b>31-69</b>			
	<b>Middle leaflet: width</b>	<b>Foliote du milieu : largeur</b>	<b>Mittlere Blattfieder: Breite</b>	<b>Folículo central: anchura</b>			
	very narrow	très étroite	sehr schmal	muy estrecha			1
	very narrow to narrow	très étroite à étroite	sehr schmal bis schmal	muy estrecha a estrecha			2
	narrow	étroite	schmal	estrecha			3
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media			4
	medium	moyenne	mittel	media	Merviot, Lemmon		5
	medium to broad	moyenne à large	mittel bis breit	media a ancha			6
	broad	large	breit	ancha	Ostro, Rotra		7
	broad to very broad	large à très large	breit bis sehr breit	ancha muy ancha			8
	very broad	très large	sehr breit	muy ancha			9
<b>15. (*)</b>	<b>QN</b>	<b>MSJA</b>	<b>(+)</b>	<b>39-69</b>			
	<b>Time of flowering</b>	<b>Époque de floraison</b>	<b>Zeitpunkt der Blüte</b>	<b>Época de floración</b>			
	very early	très précoce	sehr früh	muy temprana			1
	very early to early	très précoce à précoce	sehr früh bis früh	muy temprana a temprana			2
	early	précoce	früh	temprana	Astur, Formica		3
	early to medium	précoce à moyenne	früh bis mittel	temprana a intermedia			4
	medium	moyenne	mittel	intermedia	Margot, Agil		5
	medium to late	moyenne à tardive	mittel bis spät	intermedia a tardía			6
	late	tardive	spät	tardía	Lucrum		7
	late to very late	tardive à très tardive	spät bis sehr spät	tardía a muy tardía			8
	very late	très tardive	sehr spät	muy tardía	Rajah		9
<b>16. (*)</b>	<b>QN</b>	<b>MSJA</b>	<b>(+)</b>	<b>(a)</b>	<b>39-69</b>		
	<b>Stem: length</b>	<b>Tige : longueur</b>	<b>Stängel: Länge</b>	<b>Tallo: longitud</b>			
	very short	très courte	sehr kurz	muy corta			1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta			2
	short	courte	kurz	corta	Aberchianti		3
	short to medium	courte à moyenne	kurz bis mittel	corta a media			4
	medium	moyenne	mittel	media	Slavin, Tempus		5
	medium to long	moyenne à longue	mittel bis lang	media a larga			6
	long	longue	lang	larga			7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga			8
	very long	très longue	sehr lang	muy larga	Jogeva 205		9

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>17.</b>	<b>QN</b>	<b>MS A</b>	<b>(+)</b>	<b>(a)</b>	<b>39-69</b>			
	<b>Stem: thickness</b>	<b>Tige : épaisseur</b>	<b>Stängel: Dicke</b>	<b>Tallo: grosor</b>				
	thin	mince	dünn	delgado				1
	thin to medium	mince à moyenne	dünn bis mittel	delgado a medio				2
	medium	moyenne	mittel	medio	Astur, Noe			3
	medium to thick	moyenne à épaisse	mittel bis dick	medio a grueso				4
	thick	épaisse	dick	grueso				5
<b>18. (*)</b>	<b>QN</b>	<b>MS A</b>	<b>(a)</b>	<b>39-69</b>				
	<b>Stem: number of internodes</b>	<b>Tige : nombre d'entre-nœuds</b>	<b>Stängel: Anzahl Internodien</b>	<b>Tallo: número de entrenudos</b>				
	very few	très petit	sehr wenige	muy bajo				1
	very few to few	très petit à petit	sehr wenige bis wenige	muy bajo a bajo				2
	few	petit	wenige	bajo				3
	few to medium	petit à moyen	wenige bis mittel	bajo a medio				4
	medium	moyen	mittel	medio	Polana, Tedi			5
	medium to many	moyen à élevé	mittel bis viele	medio a alto				6
	many	élevé	viele	alto	Lucrum, Titus			7
	many to very many	élevé à très élevé	viele bis sehr viele	alto a muy alto				8
	very many	très élevé	sehr viele	muy alto	Jogeva 205			9
<b>19.</b>	<b>QN</b>	<b>MG B VG B</b>	<b>(+)</b>					
	<b>Plant: natural height in aftermath</b>	<b>Plante : hauteur naturelle de la repousse après la coupe</b>	<b>Pflanze: natürliche Höhe im Nachwuchs</b>	<b>Planta: altura natural del rebrote después del corte</b>				
	very short	très basse	sehr niedrig	muy baja				1
	very short to short	très basse à basse	sehr niedrig bis niedrig	muy baja a baja				2
	short	basse	niedrig	baja	Ilte			3
	short to medium	basse à moyenne	niedrig bis mittel	baja a media				4
	medium	moyenne	mittel	media	Tornado, Lemmon			5
	medium to tall	moyenne à haute	mittel bis hoch	media a alta				6
	tall	haute	hoch	alta	Tempus, Formica			7
	tall to very tall	haute à très haute	hoch bis sehr hoch	alta a muy alta				8
	very tall	très haute	sehr hoch	muy alta				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) Observations should be done on the longest stem excluding side branches.
- (b) To be assessed on the longest stem on the third leaf back from the growing tip.

8.2 *Explanations for individual characteristics*

Ad. 1: Plant: ploidy

Ploidy should be assessed by standard cytological methods.

Ad. 2: Cotyledon: length

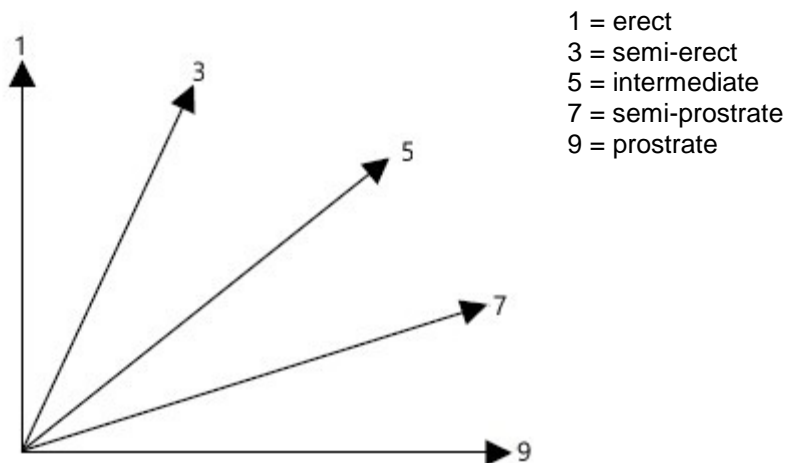
Observations should be made 12-14 days after sowing in the greenhouse, when the first leaf is fully developed. If the two cotyledons differ in size, the biggest one should be measured.

Ad. 3: Cotyledon: width

Observations should be made 12-14 days after sowing in the greenhouse, when the first leaf is fully developed. If the two cotyledons differ in size, the biggest one should be measured.

Ad. 7: Plant: growth habit

A visual estimate is taken of the angle that the outer shoots make with the horizontal axis.



Ad. 8: Plant: tendency to flower without vernalization

The number of plants showing inflorescences should be recorded for each variety. To be assessed at one occasion on the whole trial when the development stagnates before vernalization.

Ad. 12: Leaf: length of petiole

Length of the petiole should be measured from the base of the middle leaflet to the point of attachment to the stem.

Ad. 15: Time of flowering

Time of flowering is reached when 3 inflorescences per plant are showing color.

Ad. 16: Stem: length

Stem length should be measured from the base of plant to the base of the terminal inflorescence.

Ad. 17: Stem: thickness

Stem thickness should be measured 2 to 4 cm above tillering node.

Ad. 19: Plant: natural height in aftermath

Observations should be made within 4 to 6 weeks after the summer cut.

8.3 *Phenological growth stages based on the general BBCH-scale (Meier, 2001) adjusted for Red Clover*

Principal growth stage 0: Germination

00: Dry seed

Principal growth stage 1: Leaf development

11: First leaf unfolded

13: 3 leaves unfolded

Principal growth stage 2: Formation of side shoots/tillering

29: 9 or more shoots visible

Principal growth stage 3: Stem elongation

31: Stem 10% of final length

39: Maximum stem length reached

Principal growth stage 6: Flowering

69: End of flowering



9. Literature

Meier, U., 2001: Growth stages of mono- and dicotyledonous plants. BBCH-Monograph, German Federal Biological Research Centre for Agriculture and Forestry.

Mousset-Déclas, C., 1992: Le Trèfle Violet. In "Amélioration des espèces végétales cultivées, objectif et critères de sélection," ed. Gallais et Bannerot, INRA ed., pp.339-348.

Mousset-Déclas, C., 1995: Les trèfles ou le genre Trifolium. In "Ressources génétiques des plantes fourragères et à gazon. Properi, Guy, Balfourier Coord. Coéd. BRG-INRA, pp. 177-211.

Taylor, N.L., 1985: Clover science and technology, Agronomy nr. 25 in the series American Society of Agronomy, Inc., Crop Science Society.

Taylor, N.L., Quesenberry, K.H., 1996: Red Clover Science, Kluwer Academic Publishers, 228 pp.

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	Botanical name	<input type="text" value="Trifolium pratense L."/>
1.2	Common name	<input type="text" value="Red Clover"/>
2. Applicant		
	Name	<input type="text"/>
	Address	<input type="text"/>
	Telephone No.	<input type="text"/>
	Fax No.	<input type="text"/>
	E-mail address	<input type="text"/>
	Breeder (if different from applicant)	<input type="text"/>
3. Proposed denomination and breeder's reference		
	Proposed denomination (if available)	<input type="text"/>
	Breeder's reference	<input type="text"/>

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#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 varieties)  
(.....) 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) Cross-pollination [ ]

(b) Other (please provide details) [ ]

4.2.2 Vegetative propagation

(a) Cuttings [ ]

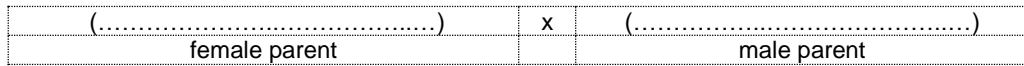
(b) *In vitro* propagation [ ]

(c) Other (state method) [ ]

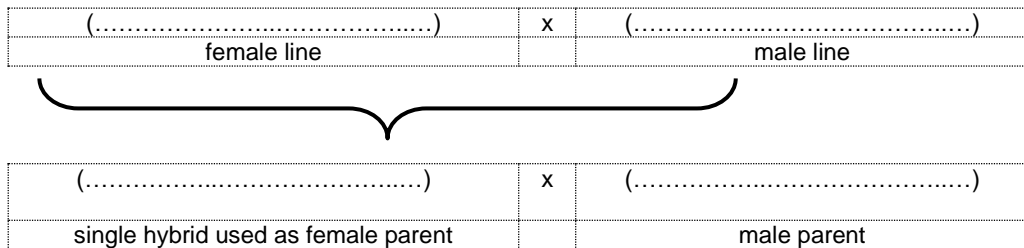
4.2.3 Other [ ]  
 (Please provide details)

In the case of hybrid varieties the production scheme for the hybrid should be provided on a separate sheet. This should provide details of all the parent lines required for propagating the hybrid e.g.

*Single Hybrid*



*Three-Way Hybrid*



and should identify in particular:

- (a) any male sterile lines
- (b) maintenance system of male sterile lines.

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
<b>5.1 Plant: ploidy (1)</b>		
diploid	Start	2 [ ]
tetraploid	Titus	4 [ ]
<b>5.2 Middle leaflet: length (13)</b>		
very short		1 [ ]
very short to short		2 [ ]
short	Tuscan	3 [ ]
short to medium		4 [ ]
medium	Astur, Vltavín	5 [ ]
medium to long		6 [ ]
long		7 [ ]
long to very long		8 [ ]
very long		9 [ ]
<b>5.3 Middle leaflet: width (14)</b>		
very narrow		1 [ ]
very narrow to narrow		2 [ ]
narrow		3 [ ]
narrow to medium		4 [ ]
medium	Lemmon, Merviot	5 [ ]
medium to broad		6 [ ]
broad	Ostro, Rotra	7 [ ]
broad to very broad		8 [ ]
very broad		9 [ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
<b>5.4 Time of flowering</b> <b>(15)</b>		
very early		1 [ ]
very early to early		2 [ ]
early	Astur, Formica	3 [ ]
early to medium		4 [ ]
medium	Agil, Margot	5 [ ]
medium to late		6 [ ]
late	Lucrum	7 [ ]
late to very late		8 [ ]
very late	Rajah	9 [ ]
<b>5.5 Stem: length</b> <b>(16)</b>		
very short		1 [ ]
very short to short		2 [ ]
short	Aberchianti	3 [ ]
short to medium		4 [ ]
medium	Slavin, Tempus	5 [ ]
medium to long		6 [ ]
long		7 [ ]
long to very long		8 [ ]
very long	Jogeva 205	9 [ ]

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 <b>similar</b> variety(ies)	Describe the expression of the characteristic(s) for <b>your</b> candidate variety
<i>Example</i>	<i>Time of flowering</i>	<i>very early</i>	<i>early</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  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



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]