

TG/38/7(proj.3)
ORIGINAL:English
DATE: January17,2003

# INTERNATIONALUNIONFORTHEPROTECTIONOFNEWVARIETIESOFPLANTS

**GENEVA** 

# DRAFT

### WHITECLOVER

(*Trifoliumrepens* L.)

### **GUIDELINES**

### **FORTHECONDUCTOFTESTS**

# FORDISTINCTNESS, UNIFORMITY AND STABILITY

# AlternativeNames: \*

Latin	English	French	German	Spanish
Trifoliumrepens L.	Whiteclover	Trèfleblanc	Weissklee	Trébolblanco

### **ASSOCIATEDDOCUMENTS**

These guidelines should be read in conjunction with document TG/1/3, "Ge neral Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants" (herein after referred to as the "General Introduction") and its associated "TGP" documents.

\_

<sup>\*</sup> 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.]

# TG/38/7(proj.3) WhiteClover,2003 -01-17 -2-

<u>TA</u>	BLE OFCONTENTS	<u>PAGE</u>
1.	SUBJECTOFTHESEGUI DELINES	3
2.	MATERIALREQUIRED	
3.	METHODOFEXAMINATIO N	
٠.	3.1 DurationofTests	
	3.2 TestingPlace	
	3.3 ConditionsforConductingtheExamination	
	3.4 TestDesign	
	3.5 Number of Plants/Parts of Plants to be Examined	
	3.6 AdditionalTests	
4.	ASSESSMENTOFDISTIN CTNESS,UNIFORMITYA NDSTABILITY	5
	4.1 Distinctness	
	4.2 Uniformity	5
	4.3 Stability	
5.	GROUPINGOFVARIETIE SANDORGANIZATIONO FTHEGROWINGTRIAL	6
6.	INTRODUCTIONTOTHE TABLEOFCHARACTERIS TICS	6
	6.1 Categories of Characteristics	6
	6.2 StatesofExpressionandCorrespondingNotes	6
	6.3 TypesofExpression	7
	6.4 ExampleVarieties	7
	6.5 Legend	7
7.	TABLEOFCHARACT ERISTICS	8
8.	EXPLANATIONSONTHE TABLEOFCHARACTERIS TICS	14
	8.1 Explanationscoveringseveralcharacteristics	14
	8.2 Explanationsforindividualcharacteristics	14
9.	LITERATURE	17
10	TECHNICAL OLIESTIONNA IDE	10

# TG/38/7(proj.3) WhiteClover,2003 -01-17

# 1. <u>SubjectoftheseGuidelines</u>

TheseTestGuidelinesapplytoallvarietiesof Trifoliumrepens L.

### 2. MaterialRequired

- 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 mus tensure that all customs formalities and phytosanitary requirements are complied with.
- 2.2 Thematerialistobesupplied in the form of seed.
- 2.3 Theminimum quantity of plantmaterial, to be supplied by the applicant, should be:

1.0kg.

- 2.4 The see d should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should be stated by the applicant.
- 2.5 The plant material supplied should be visibly healthy, not lacking in vigor, nor affectedbyanyimportantpestordisease.
- 2.6 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 requestsuchtreatment. If it has been treated, full details of the treatment must be given.

### 3. MethodofExamination

### 3.1 Duration of Tests

Theminimum duration of tests should normally betwoin dependent growing cycles.

## 3.2 TestingPlace

The tests should normally be conducted at one place. If any characteristics of the variety, which are relevant for the examination of DUS, cannot be seen at that place, the varietymay betestedatanadditional place.

# 3.3 ConditionsforConductingtheExamination

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 examination.

the

# 3.3.2 Typeofobservation –visualormeasurement

The recommended method of observing the characteristic is indicated by the followingkeyinthesecondcolumnoftheTableofCharacteristics:

MG: singlemeasurementofagroupofplan tsorpartsofplants MS: measurementofanumberofindividualplantsorpartsofplants

VG: visual assessment by a single observation of a group of plants or parts of

plants

VS: visualassessmentbyobservationofindividualplantsorpartsofplants

### 3.3.3 Typeofplotforobservation

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

A: spacedplants

B: rowplot

C: specialtest

### 3.4 TestDesign

### 3.4.1 General

The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

#### 3.4.2 Plotdesign

Each test sho uld be designed to result in a total of at least 60 spaced plants and 10 metersofrowplot.

<u>Plotswithsinglespacedplants</u>: Eachtestshouldconsistof 60 singlespacedplantsper varietyarrangedin 3,4,5 or 6 replicates, i.e. plotsof 20,15,12 or 10 plants.

<u>Rowplots</u>: Each test which includes row plots should consist of at least 10 meters of row arranged in two replicates, each of 5 meters. The density of sowing should be such that about 200 plants permeter should be obtained.

### 3.5 Number of Plants/Parts of Plants to be Examined

Unless otherwise indicated, all observations determined by measuring or counting shouldbemadeon60 plantsorpartstakenfromeachof60 plants.

### 3.6 AdditionalTests

Additionaltests, for examining relevant charac teristics, may be established.

### 4. Assessmentof Distinctness, Uniformity and Stability

### 4.1 Distinctness

#### 4.1.1 GeneralRecommendations

- 4.1.1.1 ItisofparticularimportanceforusersoftheseTestGuidelinestoconsulttheGeneral Introductionpriortoma kingdecisionsregardingdistinctness. However, the following points are provided for elaboration or emphasis in these TestGuidelines.
- 4.1.1.2 Characteristics should be measured so that a mean value per plot can be obtained: from these data a standard deviation per variety can be derived and the data submitted to a 'two-way' analysis of variance. The significance of measured differences should be taken into account for assessing distinctness and the preparation of descriptions.

### 4.1.2 ConsistentDif ferences

The minimum duration of tests recommended in section 3.1 reflects, in general, the needtoensurethatanydifferencesinacharacteristicaresufficientlyconsistent.

#### 4.1.3 ClearDifferences

Determining whether a difference between two varie ties 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 t hat users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

### 4.2 Uniformity

- 4.2.1 ItisofparticularimportanceforusersoftheseTestGuidelinestocons ulttheGeneral Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these TestGuidelines:
- 4.2.2 Theassessmentofuniformityforcross -pollinated varieties should be acc or ding to the recommendations in the General Introduction.
- 4.2.3 Fortheassessmentofuniformityofavariety, the standard deviation of the mean value for each characteristic should be compared with the mean of the standard deviations of comparable varieties using a recognized statistical technique.

## 4.3 Stability

4.3.1 Inpractice, it is not usual toper form tests of stability that produce results ascertain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

- 4.3.2 Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new seed or plant stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.
- 5. <u>GroupingofVarietiesandOrganizationoftheGrowingTrial</u>
- 5.1 The selection of varieties of common knowledge to be grown in the trial winth the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness is aided by the use of grouping characteristics.
- 5.2 Groupingcharacteristicsarethoseinwhichthedocumentedstateso fexpression, even where produced at different locations, can be used, either individually or incombination 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 trials oth at similar varieties are grouped to gether.
- 5.3 Thefollowinghavebeenagreedasuseful grouping characteristics:
  - (a) Plant:prominenceofwhiteleafmarks(characteristic5);
  - (b) Leaf:sizeof medianleaflet(characteristic16).
- 5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness,isprovidedthroughtheGeneralIntroduction.
- 6. <u>IntroductiontotheTableofCharacteristics</u>
- 6.1 Categories of Characterist ics
  - 6.1.1 StandardTestGuidelinesCharacteristics

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 AsteriskedCharacteristics

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 StatesofExpressionandCorrespondingNotes

Statesofexpressionaregiv enforeachcharacteristictodefinethecharacteristicandto harmonizedescriptions. 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.

# TG/38/7(proj.3) WhiteClover,2003 -01-17

# 6.3 Typesof Expression

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

## 6.4 ExampleVarieties

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

- 6.5 Legend
- (\*) Asteriskedcharacteristic –seeSection6.1.2
- QL Qualitative characteristic seesection 6.3
- QN Quantitative characteristic seesection 6.3
- PQ Pseudo-Qualitativecharacteristic –seesection6.3
- (a)-(b) SeeExplanationsontheTableofCharacteristicsinChapter8,section8.1.
- (+) SeeExplanationsontheTableofCharacteristicsinChapter8,section8.2.

A B Typeofplotforobservatio n–seeSection3.3.3

# TG/38/7(proj.3) WhiteClover/Trèfleblanc/Weissklee/Trébolblanco ,2003 -01-17 -8-

# 7. <u>TableofCharacteristics/Tableaudescaractères/Merkmalstabelle/Tabladecaracteres</u>

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedadesejemplo	Note/ Nota
1.	A	Plant:tendencyt o	Plante:tendanceà	Pflanze:Neigung	Planta:tendenciaa		_
(+)	VS	forminflorescences beforevernalization	formerdes inflorescences avant lavernalisation	zurBildungvon Blütenständen vor derVernalisation	formar inflorescencias antes delavernalización		
QN		absentorveryweak	nulleoutrèsfaible	fehlendodersehr gering	ausenteomuydébil	Barbian	1
		weak	faible	gering	débil	Aran	3
		medium	moyenne	mittel	media	Milkanova	5
		strong	forte	stark	fuerte	LunedeMai	7
		verystrong	trèsforte	sehrstark	muyfuerte	Tivoli	9
2.	A -VS	Plant:intensityof greencolor	Plante:intensitéde lacouleurverte	Pflanze:Intensität derGrünfärbung	Planta:intensidad delcolorverde		
(+)	B-VG	greeneolor	inconicui verte	uci Grumur bung	deletion verde		
QN		light	claire	hell	claro	Avoca	3
		medium	moyenne	mittel	medio	Milkanova	5
		dark	foncée	dunkel	obscuro	Brindisi	7
	A –VS B -VG	Plant:densityof foliage	Plante:densitédu feuillage	Pflanze:Dichtedes Laubes	Planta:densidaddel follaje		
QN		low	faible	gering	baja	Makuri	3
		medium	moyenne	mittel	media	Barblanca	5
		high	élevée	hoch	alta	GrasslandsTahora	7
4.	С	Plant:proportionof plantswithcyanid	Plante:proportion deplantesà	Pflanze:Anteilder Pflanzenmit	Planta:proporción deplantascon		
(+)		glucoside	glucosides cyanogènes	Cyanglukosid	glucosidos cianogenéticos		
QN		absentorverylow	absenteoutrèsfaible	fehlendodersehr gering	ausenteomuybaja	Pertina	1
		low	faible	gering	baja	Barbian	3
		medium	moyenne	mittel	media	GrasslandsTahora	5
		high	élevée	hoch	alta	Avoca	7
		very high	trèsélevée	sehrstark	muyalta	GrasslandsPitau	9

# TG/38/7(proj.3) WhiteClover/Trèfleblanc/Weissklee/Trébolblanco ,2003 -01-17 -9-

		English	français	deutsch	español	ExampleVarieties Exemples Beispielssorten Variedadesejemplo	Note/ Nota
5. (*) (+)	A -VS B -VG	Plant:prominence ofwhiteleafmarks	Plante: proéminence desmarques foliairesblanches	Pflanze: Ausprägungder weißen Blattzeichnung	Planta: prominencia delasmarcas foliaresblancas		
QN		absentorveryweak	nulleoutrèsfaible	fehlendodersehr gering	ausenteomuydébil	SteinacherWeißklee	1
		weak	faible	gering	débil		3
		medium	moyenne	mittel	media	Asterix	5
		strong	forte	stark	fuerte		7
		verystrong	trèsfor te	sehrstark	muyfuerte	Haifa	9
6. (*) (+)	A -MS B -MG	Plant:timeof flowering	Plante:époquede floraison	Pflanze:Zeitpunkt derBlüte	Planta:épocadela floración		
QN		veryearly	trèsprécoce	sehrfrüh	muyprecoz	Haifa	1
		early	précoce	früh	precoz	Chieftain	3
		medium	moyenne	mittel	media	GrasslandsHuia	5
		late	tardive	spät	tardía	Tivoli	7
		verylate	trèstardive	sehrspät	muytardía	Regal	9
7.	A -MS B -MG	Plant:natural height	Plante:hauteur naturelle	Pflanze:natürliche Höhe	Planta:altura		
QN	(a)	short	courte	niedrig	corta	KentWildWhite	3
		medium	moyenne	mittel	media	Pertina	5
		tall	longue	hoch	larga	Milkanova	7
8.	A	Plant:width	Plante:largeur	Pflanze:Breite	Planta:anchura		
	MS						
QN	(a)	narrow	étroite	schmal	estrecha	Asterix	3
		medium	moyenne	mittel	media	Regal	5
		broad	large	breit	ancha	Aran	7

# TG/38/7(proj.3) WhiteClover/Trèfleblanc/Weissklee/Trébolblanco ,2003 -01-17 -10-

		English	français	deutsch	español	ExampleVarieties Exemples Beispielssorten Variedadesejemplo	Note/ Nota
9.	A –VS B –VG	Plant:growthhabit	Plante:port	Pflanze:Wuchs form	Planta:porte		
QN	(a)	semi-erect	demi dressé	halbaufrecht	semierecto		3
		intermediate	demi dresséà demi étalé	mittel	intermedio	Makuri	5
		semi-postrate	demi étalé	halbliegend	semipostrado	GrasslandsTahora	7
<b>10.</b> (+)	A MS	Stem: internode lengthofstolon	Tige:longueurde l'entrenœud du stolon	Stengel: Internodienlänge desAusläufers	Tallo: longituddel entrenudodel estolón		
QN	<b>(b)</b>	short	court	kurz	corta	GrasslandsTahora	3
		medium	moyen	mittel	media	Aran	5
		long	long	lang	larga	Barblanca	7
11.	A MS	Stem:thicknessof stolon	Tige:grosseurdu stolon	Stengel:Dickedes Ausläufers	Tallo:grosordel estolón		
QN	<b>(b)</b>	verythin	trèsfin	sehrdünn	muydelgado	KentWildWhite	1
		thin	fin	dünn	delgado	Barbian	3
		medium	moyen	mittel	medio	GrasslandsHuia	5
		thick	gros	dick	grueso	Kersey	7
		verythick	trèsgros	sehrdick	muygrue so	Aran	9
12.	A MS	Leaf:lengthof petiole	Feuille:longueurdu pétiole	Blatt:Längedes Blattstiels	Hoja:longituddel pecíolo		
QN	<b>(b)</b>	short	court	kurz	corta	Asterix	3
		medium	moyen	mittel	media	GrasslandsHuia	5
		long	long	lang	larga	Chieftain	7

# TG/38/7(proj.3) WhiteClover/Trèfleblanc/Weissklee/Trébolblanco ,2003 -01-17 -11-

		English	français	deutsch	español	ExampleVarieties Exemples Beispielssorten Variedadesejemplo	Note/ Nota
13. (+)	A MS	Leaf:thicknessof petiole	Feuille:grosseurdu pétiole	Blatt:Dickedes Blattstiels	Hoja:grosordel pecíolo		
QN	<b>(b)</b>	verythin	trèsfin	sehrdünn	muydelgado	KentWildWhite	1
		thin	fin	dünn	delgado	Barbian	3
		medium	moyen	mittel	medio	Avoca	5
		thick	gros	dick	grueso	Milkanova	7
		verythick	trèsgros	sehrdick	muygrueso	Regal	9
14. (*) (+)	A MS	Leaf:lengthof medianleaflet	Feuille:longueurde lafoliolemédiane	Blatt:Längedes mittleren Fiederblattes	Hoja:longitud del folíolocentral		
QN	<b>(b)</b>	veryshort	trèscourte	sehrkurz	muycorta	KentWildWhite	1
		short	courte	kurz	corta	Barbian	3
		medium	moyenne	mittel	media	Avoca	5
		long	longue	lang	larga	GrasslandsPitau	7
		verylong	trèslongue	sehrlang	muylar ga	Aran	9
15. (*) (+)	A MS	Leaf:widthof medianleaflet	Feuille:largeurdela foliolemédiane	Blatt:Breitedes mittleren Fiederblattes	Hoja:anchuradel folíolocentral		
QN	<b>(b)</b>	verynarrow	trèsétroite	sehrschmal	muyestrecha	KentWildWhite	1
		narrow	étroite	schmal	estrecha	Barbian	3
		medium	moyenne	mittel	media	GrasslandsHuia	5
		broad	large	breit	ancha	GrasslandsPitau	7
		verybroad	trèslarge	sehrbreit	muyancha	Aran	9

# TG/38/7(proj.3) WhiteClover/Trèfleblanc/Weissklee/Trébolblanco ,2003 -01-17 -12-

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedadesejemplo	Note/ Nota
16. (*) (+)	A MS	Leaf:sizeofmedian leaflet	Feuille:taillede la foliolemédiane	Blatt:Größedes mittleren Fiederblattes	Hoja:tamañodel folíolocentral		
QN	<b>(b)</b>	verysmall	trèspetite	sehrklein	muypequeño	KentWildWhite	1
		small	petite	klein	pequeño	Rivendel	3
		medium	moyenne	mittel	medio	Pertina	5
		large	grande	groß	grande	GrasslandsPitau	7
		verylarge	trèsgrande	sehrgroß	muygrande	Aran	9
17. (*) (+)	A MS	Leaf:ratiooflength towidthofmedian leaflet	Feuille:rapport longueur/largeurde lafoliolelatérale	Blatt:Verhältnis Länge/Breitedes mittleren Fiederblattes	Hoja:relación longitud/anchuradel folíolocentral		
QN		small	petit	klein	pequeño	Donna	3
		medium	moyen	mittel	medio	Barbian	5
		large	grand	groß	grande	Rivendel	7
<b>18.</b> (+)	A MS	Inflorescence:length ofpeduncle	Inflorescence: longueurdu pédoncule	Blütenstand: Längedes Blütenstandsstiels	Inflorescencia: longituddel pedúnculo		
QN		short	court	kurz	corto	KentWildWhite	3
		medium	moyen	mittel	medio	GrasslandsHuia	5
		long	long	lang	alto	Aran	7
<b>19.</b> (+)	A MS	Inflorescence: thicknessof peduncle	Inflorescence: grosseurdu pédoncule	Blütenstand: Dickedes Blütenstandsstiels	Inflorescencia: grosordel pedúnculo		
QN		thin	fin	dünn	delgado	GrasslandsDemand	3
		medium	moyen	mittel	medio	GrasslandsPitau	5
		thick	gros	dick	grueso	Aran	7

# TG/38/7(proj.3) WhiteClover/Trèfleblanc/Weissklee/Trébolblanco ,2003 -01-17 -13-

		English	français	deutsch	español	ExampleVarieties Exemples Beispielssorten Variedadesejemplo	Note/ Nota
<b>20.</b> (+)	A VS	Plant:number of inflorescences	Plante:nombre d'inflorescences	Pflanze:Anzahl Blütenstände	Planta:númerode inflorescencias		
QN		small	petit	klein	pequeño	Regal	3
		medium	moyen	mittel	medio	Avoca	5
		large	grand	groß	grande	Milkanova	7
21.	A	Inflorescence:	Inflorescence:	Blütenstand:	Inflorescencia:		
(+)	VS	diameter	diamètre	Durchmesser	diámetro		
QN		small	petit	klein	pequeño	GrasslandsDemand	3
		medium	moyen	mittel	medio	Beaumont	5
		large	grand	groß	grande	Crusader	7

# 8. <u>ExplanationsontheTableofCharacteristics</u>

# 8.1 Explanationscoveringseveralcharacteristics

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

- (a) To be assessed on plants at the time of flowering (a variety is considered as flowering when 50% of the plants have flowered).
- (b) <u>Stemandleaf</u>: Observationsonthestemandontheleafshouldbemadeafter all the plants of each variety in a replicat e have flowered, and within 1-2weeks after flowering. The longest healthily growing stolon should be selectedfromeachplantformeasurement.

## 8.2 Explanations for individual characteristics

### Ad.1:Plant:tendencytoforminflorescencesbeforevernal ization

 $The \, observation \, should \, be \, made \, before \, the \, period \, of \, vernalization. \, \, The \, number \, of \, flower heads produced on each plant should be assessed and scored.$ 

# Ad.2:Plant:intensityofgreencolor

The observation should be made in the vegetative phase by examination and scoring of the overall green color of the plant.

### Ad.3:Plant:densityoffoliage

The observation should be made in the vegetative phase by examination and scoring of the overall ground cover of the foliage of the plant.

### Ad.4:Plant:proportionofplantswithcyanidglucoside(HCN)

*Preparationofpicro -sodicpaper(indicatorpaper):* 

1.0 gofpicricacidisdissolvedin100 mlofdistilledwater. (Heatisnormallyrequired.)

10 gofsodiumcarbonateisdissolvedin100 mlo fdistilledwater.

When the picric acid solution has cooled, the sodium carbonate solution is added, mixedandstoredinanamberreagentbottle.

Strips of What mann No. 1 filter paper are dipped in this solution and can be stored drying a desic cator.

# TG/38/7(proj.3) WhiteClover,2003 -01-17

### TxtProcedure:

- 1. Healthyleaves(preferablyfolded)areselectedfromeachofthesixtyplantsandputinto separateeppendorftubes(onetrifoliateleafpertube).
- 2. Thetubesareclosedandplacedinafreezerat -18°Cforaminimumoftwohours.
- 3. Afterfre ezing, a strip of indicator paper is placed across the opening of the eppendorf tubes and the lidelosed. This is sufficient to hold the paper in place.
- 4. Thetubesareplacedindarknessinawaterbathat50°Cfortwohours.
- 5. If there is HCN present the paper will change from yellow to red. The colour reaction is recorded as presence/absence of red colour for each of the six typlants.

## Ad.5:Plant:prominenceofwhiteleafmarks

The observation should be made before flowering by examination and scor ing of the plantas awhole. The presence of any type of white mark or the complete absence of marks is recorded.

# Ad.6:Plant:timeofflowering

In single spaced plants, a plant is considered as flowering when three inflorescences perplantare show in gcolour. Observations should be made at least twice weekly. The time of flowering for all plants in a variety is observed and the time of flowering of the variety is determined as the time when 50% of the plants had flowered.

Inrowplots, aplantis considered as flowering when three inflorescences perplantare showing colour. Observations should be made at least twice weekly. The time of flowering for all plants in a variety is observed and the time of flowering of the variety is determined as the time when 80% of the plants had flowered.

### Ad.10,11:Stem:internodelength(10)andthickness(11)ofstolon

The internode length of the stolon should be measured between the third and fourth node counted from the growing tip.

 $The thickness (dia\ meter) of the stolon should be measured at a point midway between the third and the fourthnode counted from the growing tip.$ 

# TG/38/7(proj.3) WhiteClover,2003 -01-17

## Ad.12,13:Leaf:length(12),andthickness(13)ofpetiole

The petiole of the third expanded leaf, counted from the growin g tip of the stolon, should be selected formeasurement.

The length of the petiole should be measured from the base of the medium trifoliate leaflet to the stolon.

The thickness should be measured at the widest point of the petiole.

### Ad.14,15:Leaf :length(14)andwidth(15)ofmedianleaflet

The median trifoliate leaflet of the third expanded leaf from the growing tip of the stolonshould be selected formeasurement of its length and width.

### Ad.16:Leaf:sizeofmedianleaflet

Calculated from the measurements of leaflength (14)x leafwidth (15).

### Ad.17:Leaf:ratiooflengthtowidthofmedianleaflet

Calculated from the ratio of leaflength (14)  $\div$  leaf width (15).

### Ad.18,19:Inflorescence:length(18)andthickness(19)ofped uncle

A mature inflorescence taken from close to center of the plant is selected for measurementofitspedunclelengthandpedunclethickness.

The length of the peduncle should be measured from the base of the inflorescence to the stolon.

The thick ness of the peduncle should be measured at a point midway between the base of the inflorescence and the stolon.

## Ad.20:Plant:numberofinflorescences

The number of inflorescences per plant is assessed on each of the 60 plants of a varietyatmaturit y,normally30 daysafterthemeandateoffloweringofthevariety.

## Ad.21:Inflorescence:diameter

Time of measurement as for characteristic 20. The size of the inflorescences on the plant should be estimated on each of the six typlants of a varie tyon a 1 -9 scale on the plant taken as a whole.

# 9. <u>Literature</u>

Nospecificliterature.

# 10. <u>TechnicalQuestionnaire</u>

TECHNICALQUESTIONNAIRE			Page{x}of{y}	ReferenceNumber:			
				Applicationdate: (nottobefilledinbytheapplicant)			
TECHNICALQUEST IONNAIRE tobecompletedinconnectionwithanapplicationforplantbreeders' rights							
1.	SubjectoftheTechnicalQues	tion	naire				
	1.1 LatinName	Tri	foliumrepens L.				
	1.2 CommonName	Wh	niteClover				
2.	Applicant						
	Name						
	Address						
	TelephoneNo.						
	FaxNo.						
	E-mailaddress						
	Breeder(ifdifferentfromapp	lica	nt)				
3.	Proposeddenominationandb	oree	der'sreference				
	Proposeddenomination [(ifavailable)						
	Breeder'sreference						

TECHNICALQUESTIONNAIRE	Page $\{x\}$ of $\{y\}$	ReferenceNumber:

4.1 BreedingScheme

4.2 MethodofPropagatingtheVariety

5. Characteristics of the variety to be indicated (the number in brackets refers to the correspondingch aracteristicinTestGuidelines;pleasemarkthenotewhichbestcorresponds).

	Characteristics	ExampleVarieties	Note
5.1 (5)	Plant:prominenceofwhiteleafmarks		
	absentorveryweak	SteinacherWeißklee	1[]
	weak		3[]
	medium	Asterix	5[]
	strong		7[]
	verystrong	Haifa	9[]

# TG/38/7(proj.3) WhiteClover,2003 -01-17 -20-

TECHNICALQUESTIONNAIRE Page{x}of{y} ReferenceNumber:

	Characteristics	ExampleVarieties	Note
5.2 (6)	Plant:timeofflowering		
	veryearly	Haifa	1[]
	early	Chieftain	3[]
	medium	GrasslandsHuia	5[]
	late	Tivoli	7[]
	verylate	Regal	9[]
5.3 (14)	Leaf:lengthofmedianleaflet		
	veryshort	KentWildWhite	1[]
	short	Barbian	3[]
	medium	Avoca	5[]
	long	GrasslandsPitau	7[]
	verylong	Aran	9[]
5.4 (15)	Leaf:widthofmedianleaflet		
	verynarrow	KentWildWhite	1[]
	narrow	Barbian	3[]
	medium	GrasslandsHuia	5[]
	broad	GrasslandsPitau	7[]
	verybroad	Aran	9[]
5.5 (16)	Leaf:sizeofmedianleaflet		
	verysmall	KentWildWhite	1[]
	small	Rivendel	3[]
	medium	Pertina	5[]
	large	GrasslandsPitau	7[]
	verylarge	Aran	9[]

# TG/38/7(proj.3) WhiteClover,2003 -01-17 -21-

TECHNICALQUESTIONNAIRE	$Page\{x\}of\{y\}$	ReferenceNumber:

6. Similarvarieties and differences from these varieties							
Denomination(s)of variety(ies)similarto yourcandidatevariety	Characteristic(s)in whichyourcandidate varietydiffersfrom thesimilarvariety( ies)	Describetheexpression ofthecharacteristic(s) forthe <b>similar</b> variety(ies)	Describetheexpression ofthecharacteristic(s) for <b>your</b> candidate variety				
(Example)	Plant:timeof flowering	veryearly	early				

# TG/38/7(proj.3) WhiteClover,2003 -01-17 -22-

IEC.	HNICAL	LQUES.	HONNAIRE	Page{x}of{y	}	ReferenceN	umber:	
7.	Additionalinformationwhichmayhelpintheexaminationofthevariety							
7.1	In addition to the information provided in sections 5 and 6, are there any additional characteristicswhichmayhelptodistinguishthevariety?							
		Yes		No	[]			
	(Ifyes,p	leasepro	ovidedetail s)					
7.2	<ul><li>.2 Specialconditionsfortheexaminationofthevariety</li><li>7.2.1 Are there any special conditions for growing the variety or conducting the examination?</li></ul>							
							le	
		Yes		No	[]			
	7.2.2	Ifyes,p	pleasegivedetail	s:				
7.3	Otherin	formati	on					
8.	Authori	izationfo	orrelease					
	(a) Doesthevarietyrequirepriorauthorizationforreleaseunderlegislationconcerning theprotectionoftheenvironment, human and an imalhealth?							
		Yes		No	[]			
	(b) Hassuchauthorizationbeenobtained?							
		Yes		No	[]			
	Iftheans	swerto(l	o)isyes,pleaseatt	tachacopyofthe	authoriz	ation.		
9. iscor	-	declare	that,tothebesto	fmyknowledge	theinfo	rmationprov	idedinthisform	
	Applica	nt'snam	ne					
	Signatu	re				Date		