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

Geneva

## WITLOOF CHICORY

UPOV Code(s):

CICHO\_INT

*Cichorium intybus* 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>Cichorium intybus</i> L.	Chicory	Chicorée, Endive	Chicorée	Endivia

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.

Other associated UPOV documents: Industrial Chicory (TG/172) and Leaf Chicory (TG/154)

\* 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 *Cichorium intybus* L. excluding industrial chicory (TG/172) and leaf chicory (TG/154).

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of seed.

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

50 grams or 30 000 seeds.

The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority. In cases where the seed is to be stored, the germination capacity should be as high as possible and should, be stated by the applicant.

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 *Number of Growing Cycles*

3.1.1 The minimum duration of tests should normally be two independent growing cycles.

3.1.2 All varieties should be included in one trial, regardless the season of forcing that a variety is bred for.

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*

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.

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 100 plants, which should be divided between at least 2 replicates.

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

3.5 *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.

###### 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, hybrids and seed propagated inbred lines. 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 for open-pollinated varieties should be according to the recommendations for cross-pollinated varieties in the General Introduction.
- 4.2.4 For the assessment of uniformity of hybrid varieties, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 100 plants, 3 off-types are allowed. Clearly recognizable inbred plants are excluded from the counting of off-types.
- 4.2.5 In addition :
- a population standard of 3% with an acceptance probability of at least 95% should be applied to clearly recognizable inbred plants in hybrids where male sterility has been used;
  - a population standard of 5% with an acceptance probability of at least 95% should be applied to clearly recognizable inbred plants in hybrids where male sterility has not been used.

## 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) Leaf: length (characteristic 4)
  - (b) Leaf: color (characteristic 7)
  - (c) Leaf: intensity of color (characteristic 8)
  - (d) Time of beginning of flowering (characteristic 19)
  - (e) Male sterility (characteristic 25)
- 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:

<i>State</i>	<i>Note</i>
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:

<i>State</i>	<i>Note</i>
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			
	<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)-(c) See Explanations on the Table of Characteristics in Chapter 8.1
- 7 Not applicable

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

	English		français		deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
1.	QN	VG	(+)					
	<b>Cotyledon: shape</b>		<b>Cotylédon : forme</b>		<b>Keimblatt: Form</b>	<b>Cotiledón: forma</b>		
	circular		circulaire		kreisförmig	circular	Bea, Flash, Magnum	1
	broad elliptic		elliptique large		breit elliptisch	elíptica ancha		2
	elliptic		elliptique		elliptisch	elíptica	Takine, Zoom	3
2. (*)	QN	MS/VG	(+)	(a)				
	<b>Plant: height</b>		<b>Plante : hauteur</b>		<b>Pflanze: Höhe</b>	<b>Planta: altura</b>		
	short		courte		niedrig	baja	Janus	3
	medium		moyenne		mittel	media	Ecrine, Selkis	5
	tall		haute		hoch	alta	Topmodel, Zilia	7
3. (*)	QN	VG	(+)	(a)				
	<b>Plant: habit</b>		<b>Plante : port</b>		<b>Pflanze: Wuchsform</b>	<b>Planta: porte</b>		
	upright		dressé		aufrecht	erecto		1
	semi-upright		demi-dressé		halbaufrecht	semierecto	Ecrine, Omblin	3
	spreading		étalé		breitwüchsig	extendido	Perfo	5
4. (*)	QN	MS/VG	(+)	(a)				
	<b>Leaf: length</b>		<b>Feuille : longueur</b>		<b>Blatt: Länge</b>	<b>Hoja: longitud</b>		
	short		courte		kurz	corta	Janus	3
	medium		moyenne		mittel	media	Ecrine, Omblin	5
	long		longue		lang	larga	Atlas, Platine	7
	very long		très longue		sehr lang	muy larga	Zilia	9
5. (*)	QN	MS/VG	(+)	(a)				
	<b>Leaf: width</b>		<b>Feuille : largeur</b>		<b>Blatt: Breite</b>	<b>Hoja: anchura</b>		
	narrow		étroite		schmal	estrecha	Monroe, Redoria	3
	medium		moyenne		mittel	media	Baccara, Bea, Extral, Flash, Zoom	5
	broad		large		breit	ancha	Atlas, Symphonie	7
6.	QN	MS/VG	(+)	(a)				
	<b>Leaf: ratio width/length</b>		<b>Feuille : rapport largeur/longueur</b>		<b>Blatt: Verhältnis Breite/Länge</b>	<b>Hoja: relación longitud/anchura</b>		
	low		bas		klein	baja	Zilia	3
	medium		moyen		mittel	media	Baccara, Bea, Ecrine	5
	high		élevé		groß	alta	Selkis	7



	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>7. (*)</b>	<b>QL</b>	<b>VG</b>	<b>(a)</b>				
	<b>Leaf: color</b>	<b>Feuille : couleur</b>	<b>Blatt: Farbe</b>	<b>Hoja: color</b>			
	only green	seulement verte	nur grün	solo verde	Excellence, Focus, Genie, Janus		1
	green and red	verte et rouge	grün und rot	verde y rojo	Festive		2
	only red	seulement rouge	nur rot	solo rojo	Carla, Redoria		3
<b>8. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(a)</b>				
	<b>Leaf: intensity of color</b>	<b>Feuille : intensité de la couleur</b>	<b>Blatt: Intensität der Färbung</b>	<b>Hoja: intensidad del color</b>			
	light	claire	hell	claro			3
	medium	moyenne	mittel	medio	Excellence, Festive, Janus, Redoria		5
	dark	foncée	dunkel	oscuro	Carla, Focus, Genie		7
<b>9. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(a)</b>				
	<b>Leaf: glossiness</b>	<b>Feuille : brillance</b>	<b>Blatt: Glanz</b>	<b>Hoja: brillo</b>			
	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil			1
	weak	faible	gering	débil	Abellis, Flash		2
	medium	moyenne	mittel	medio	Baccara, Fakir		3
	strong	forte	stark	fuerte	Rikita		4
	very strong	très forte	sehr stark	muy fuerte			5
<b>10. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(a)</b>			
	<b>Leaf: shape in cross section</b>	<b>Feuille : forme en section transversale</b>	<b>Blatt: Form im Querschnitt</b>	<b>Hoja: forma en sección transversal</b>			
	concave	concave	konkav	cóncava	Abellis, Crenoline		1
	flat	plane	eben	plana	Excellence, Perfo, Zilia, Zoom		2
	convex	convexe	konvex	convexa			3
<b>11. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(a)</b>				
	<b>Leaf: blistering</b>	<b>Feuille : cloûre</b>	<b>Blatt: Blasigkeit</b>	<b>Hoja: abullonado</b>			
	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil			1
	weak	faible	gering	débil	Abellis, Flash, Platine		3
	medium	moyenne	mittel	medio	Alliance, Ecrine		5
	strong	forte	stark	fuerte	Rikita, Zoom		7

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>12.</b>	<b>QN</b>	<b>VG</b>	<b>(a)</b>				
	<b>Leaf: anthocyanin coloration of midrib</b>	<b>Feuille : pigmentation anthocyanique de la nervure médiane</b>	<b>Blatt: Anthocyanfärbung der Mittelrippe</b>	<b>Hoja: pigmentación antocianica del nervio central</b>			
	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Baccara, Excellence	1	
	weak	faible	gering	débil	Abellis, Flash, Jocker	3	
	medium	moyenne	mittel	media	Zoom	5	
	strong	forte	stark	fuerte		7	
<b>13.</b>	<b>QN</b>	<b>VG</b>	<b>(a)</b>				
	<b>Leaf: undulation of margin</b>	<b>Feuille : ondulation du bord</b>	<b>Blatt: Wellung des Randes</b>	<b>Hoja: ondulación del borde</b>			
	weak	faible	gering	débil		3	
	medium	moyenne	mittel	media	Baccara, Atlas, Platine	5	
	strong	forte	stark	fuerte	Montblanc	7	
<b>14.</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(a)</b>			
	<b>Leaf: number of incisions of basal part</b>	<b>Feuille : nombre d'incisions de la partie basale</b>	<b>Blatt: Anzahl Randeinschnitte des basalen Teiles</b>	<b>Hoja: número de incisiones de la parte basal</b>			
	absent or very few	absentes ou très faibles	fehlend oder sehr wenige	ausentes o muy pocas		1	
	few	faibles	wenige	pocas	Crenoline, Selkis	3	
	medium	moyennes	mittel	medias	Alliance, Bea, Topscore	5	
	many	fortes	viele	muchas	Atlas, Zilia	7	
<b>15.</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(a)</b>			
	<b>Leaf: depth of incisions of basal part</b>	<b>Feuille : profondeur des incisions de la partie basale</b>	<b>Blatt: Tiefe der Randeinschnitte des basalen Teiles</b>	<b>Hoja: profundidad de las incisiones de la parte basal</b>			
	shallow	peu profondes	flach	poco profundas	Abellis, Desir, Flash, Zoom	3	
	medium	moyennes	mittel	medias	Baccara, Omblin, Symphonie	5	
	deep	profondes	tief	profundas	Rikita	7	
<b>16. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(a)</b>			
	<b>Leaf: incisions of margin of upper third</b>	<b>Feuille : incisions du bord du tiers supérieur</b>	<b>Blatt: Randeinschnitte des oberen Drittels</b>	<b>Hoja: incisiones del margen del tercio superior</b>			
	absent or very weak	nulles ou très faibles	fehlend oder sehr gering	ausentes o muy débiles	Selkis	1	
	weak	faibles	gering	débiles	Abellis, Flash, Janus, Topscore	3	
	medium	moyennes	mittel	medias	Baccara, Jocker, Symphonie, Zoom	5	
	strong	fortes	stark	fuertes	Platine	7	

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>17.</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(a)</b>				
	<b>Leaf: shape of apex</b>	<b>Feuille : forme du sommet</b>	<b>Blatt: Form der Spitze</b>	<b>Hoja: forma del ápice</b>				
	rounded	arrondi	abgerundet	redondeada	Abellis, Magnum, Topscore		1	
	weakly pointed	légèrement pointu	leicht spitz	ligeramente puntiaguda	Atlas, Fakir, Takine		2	
	strongly pointed	fortement pointu	sehr spitz	muy puntiaguda	Platine		3	
<b>18.</b>	<b>QN</b>	<b>VG</b>		<b>(b)</b>				
	<b>Bolting tendency</b>	<b>Tendance à la montaison</b>	<b>Neigung zum Schossen</b>	<b>Tendencia a la floración</b>				
	weak	faible	gering	débil	Bea, Montblanc		3	
	medium	moyenne	mittel	media	Flash, Omblin		5	
	strong	forte	stark	fuerte	Topmodel		7	
<b>19. (*)</b>	<b>QN</b>	<b>MS/VG</b>		<b>(b)</b>				
	<b>Time of beginning of flowering</b>	<b>Époque de début de floraison</b>	<b>Zeit des Blühbeginns</b>	<b>Época de comienzo de la floración</b>				
	early	précoce	früh	temprana	Jadore, Prestance, Takine		3	
	medium	moyenne	mittel	media	Abellis, Bea, Ecrine, Hermès, Omblin		5	
	late	tardive	spät	tardía	Flexine		7	
<b>20.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(+)</b>	<b>(b)</b>				
	<b>Flowering stem: height</b>	<b>Tige florale : hauteur</b>	<b>Blütenstengel: Höhe</b>	<b>Tallo floral: altura</b>				
	short	basse	niedrig	baja			3	
	medium	moyenne	mittel	media	Desir, Perfo		5	
	tall	haute	hoch	alta	Atlas, Festive, Selkis		7	
<b>21.</b>	<b>QN</b>	<b>VG</b>		<b>(b)</b>				
	<b>Flowering stem: branching</b>	<b>Tige florale : ramification</b>	<b>Blütenstengel: Verzweigung</b>	<b>Tallo floral: ramificación</b>				
	weak	faible	gering	débil			3	
	medium	moyenne	mittel	media	Atlas, Ecrine, Perfo		5	
	strong	forte	stark	fuerte	Abellis		7	

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>22.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(+)</b>	<b>(b)</b>				
	<b>Flowering stem: size of stipule</b>	<b>Tige florale : taille de la stipule</b>	<b>Blütenstengel: Größe des Nebenblattes</b>	<b>Tallo floral: tamaño de la estípula</b>				
	small	petite	klein	pequeño		Crenoline, Excellence, Magnum	3	
	medium	moyenne	mittel	medio		Bea, Desir, Festive, Topmodel,	5	
	large	grande	groß	grande			7	
<b>23.</b>	<b>QN</b>	<b>VG</b>	<b>(+)</b>	<b>(b)</b>				
	<b>Flowering stem: dentation of stipule</b>	<b>Tige florale : denticulation de la stipule</b>	<b>Blütenstengel: Zähnung des Nebenblattes</b>	<b>Tallo floral: dentado de la estípula</b>				
	weak	petite	schwach	débil		Alliance, Elegance, Flash, Jadore	3	
	medium	moyenne	mittel	medio		Abellis, Platine	5	
	strong	grande	stark	fuerte			7	
<b>24. (*)</b>	<b>PQ</b>	<b>VG</b>		<b>(b)</b>				
	<b>Flower: color</b>	<b>Fleur : couleur</b>	<b>Blüte: Farbe</b>	<b>Flor: color</b>				
	white	blanche	weiß	blanco			1	
	pink	rose	rosa	rosa		Selkis	2	
	blue	bleue	blau	azul		Bea, Flash	3	
<b>25. (*)</b>	<b>QL</b>	<b>VS</b>	<b>(+)</b>	<b>(b)</b>				
	<b>Male sterility</b>	<b>Stérilité mâle</b>	<b>Männliche Sterilität</b>	<b>Androesterilidad</b>				
	absent	absente	fehlend	ausente		Flash	1	
	present	présente	vorhanden	presente		Omblin	9	
<b>26. (*)</b>	<b>QN</b>	<b>MS/VG</b>		<b>(c)</b>				
	<b>Head: length</b>	<b>Chicon : longueur</b>	<b>Kopf: Länge</b>	<b>Cogollo: longitud</b>				
	very short	très court	sehr kurz	muy corto			1	
	short	court	kurz	corto			3	
	medium	moyen	mittel	medio		Bea, Omblin	5	
	long	long	lang	largo		Focus, Perfo, Prestance	7	
	very long	très long	sehr lang	muy largo		Normale	9	
<b>27. (*)</b>	<b>QN</b>	<b>MS/VG</b>		<b>(c)</b>				
	<b>Head: diameter</b>	<b>Chicon : diamètre</b>	<b>Kopf: Durchmesser</b>	<b>Cogollo: diámetro</b>				
	small	petit	klein	pequeño			3	
	medium	moyen	mittel	medio		Bea, Ecrine	5	
	large	grand	groß	grande		Zilia	7	

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>28.</b>	<b>QN</b>	<b>MS/VG</b>	<b>(c)</b>				
	<b>Head: ratio diameter/length</b>	<b>Chicon : rapport diamètre/longueur</b>	<b>Kopf: Verhältnis Durchmesser/Länge</b>	<b>Cogollo: relación diámetro/longitud</b>			
	low	bas	klein	baja	Opale	3	
	medium	moyen	mittel	medio	Bea, Desir, Panache	5	
	high	élevé	groß	alta	Atlas, Focus	7	
<b>29. (*)</b>	<b>PQ</b>	<b>VG</b>	<b>(+)</b> <b>(c)</b>				
	<b>Head: shape in longitudinal section</b>	<b>Chicon : forme en section longitudinale</b>	<b>Kopf: Form im Längsschnitt</b>	<b>Cogollo: forma en sección longitudinal</b>			
	ovate	ovale	eiförmig	oval	Abellis, Selkis	1	
	broad elliptic	elliptique large	breit elliptisch	elíptica ancha	Crenoline, Topmodel	2	
	medium elliptic	elliptique moyenne	mittel elliptisch	elíptica media	Excellence, Jocker	3	
	narrow elliptic	elliptique étroite	schmal elliptisch	elíptica estrecha	Symphonie	4	
<b>30. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(c)</b>				
	<b>Head: shape of apex</b>	<b>Chicon : forme du sommet</b>	<b>Kopf: Form der Spitze</b>	<b>Cogollo: forma del ápice</b>			
	rounded	arrondi	abgerundet	redondeada	Abellis, Crenoline	1	
	weakly pointed	légèrement pointu	leicht spitz	ligeramente puntiaguda	Baccara, Elegance	2	
	strongly pointed	fortement pointu	sehr spitz	muy puntiaguda	Fakir, Symphonie, Zoom	3	
<b>31. (*)</b>	<b>QL</b>	<b>VG</b>	<b>(c)</b>				
	<b>Head: color of leaf blade</b>	<b>Chicon : couleur du limbe</b>	<b>Kopf: Farbe der Blattspreite</b>	<b>Cogollo: color del limbo</b>			
	only yellow	seulement jaune	nur gelb	solo amarillo	Flexine, Harmonie, Perfo, Takine	1	
	yellow and red	jaune et rouge	gelb und rot	amarillo y rojo		2	
	only red	seulement rouge	nur rot	solo rojo	Festive, Selkis	3	
<b>32. (*)</b>	<b>QN</b>	<b>VG</b>	<b>(c)</b>				
	<b>Head: intensity of color of leaf blade</b>	<b>Chicon : intensité de la couleur du limbe</b>	<b>Kopf: Intensität der Blattspreitenfärbung</b>	<b>Cogollo: intensidad del color del limbo</b>			
	light	claire	hell	clara	Elegance, Perfo	3	
	medium	moyenne	mittel	media	Baccara, Harmonie, Omblin, Selkis	5	
	dark	foncée	dunkel	oscura	Abellis, Ecrine, Festive, Takine	7	

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
<b>33.</b>	<b>QN</b> <b>VG</b>	<b>(c)</b>				
	<b>Head: blistering of leaf blade</b>	<b>Chicon : cloûre du limbe</b>	<b>Kopf: Blasigkeit der Blattspreite</b>	<b>Cogollo: abullonado del limbo</b>		
	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Hermès, Topmodel	1
	weak	faible	gering	débil		3
	medium	moyenne	mittel	medio	Baccara, Festive, Zoom	5
	strong	forte	stark	fuerte		7
<b>34.</b>	<b>QN</b> <b>VG</b>	<b>(+)</b> <b>(c)</b>				
	<b>Head: openness of apex</b>	<b>Chicon : ouverture du sommet</b>	<b>Kopf: Offenheit der Spitze</b>	<b>Cogollo: apertura del ápice</b>		
	closed	fermé	geschlossen	cerrado	Baccara, Hermès	1
	half open	demi-ouvert	halb offen	semi-abierto	Abellis, Zilia	2
	fully open	complètement ouvert	ganz offen	completamente abierto	Sirion	3
<b>35.</b>	<b>QN</b> <b>VG</b>	<b>(+)</b> <b>(c)</b>				
	<b>Head: length of axis</b>	<b>Chicon : longueur de l'axe</b>	<b>Kopf: Länge der Achse</b>	<b>Cogollo: longitud del eje</b>		
	very short	très court	sehr kurz	muy corto	Selkis	1
	short	court	kurz	corto	Extral	3
	medium	moyen	mittel	medio	Ecrine, Takine	5
	long	long	lang	largo	Atlas, Zilia	7
	very long	très long	sehr lang	muy largo		9

## 8. Explanations on the Table of Characteristics

### 8.1 *Explanations covering several characteristics*

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

- (a) Observations should be made when leaves are fully developed.
- (b) Observations should be made in a special bolting trial in which a flowering stem is formed. Plants should be exposed to cold temperature in order to start bolting. An additional test in early sowing conditions may be established.
- (c) Observations should be made after a forcing period before exposure to daylight.

At the end of the growing season, roots are harvested and the leaves are cut at about 3 cm from the attachment to the root. The roots are stored at a temperature which depends on the length of the storage and with a humidity of about 95%, before transplanting to a container in 2 repetitions of 50 roots. The forcing may be performed by hydroculture or in soil. In order not to hide the phenotype of the varieties, the application of calcium chloride should be avoided. The containers are placed in a completely dark forcing room in controlled conditions (temperature, hygrometry, fertilization). The air temperature should be about 17°C and the water temperature of 18-19°C. The water and air temperature must be controlled to allow the complete and normal development of the head. Literature may be consulted (Willocx).

### 8.2 *Explanations for individual characteristics*

#### Ad. 1: Cotyledon: shape

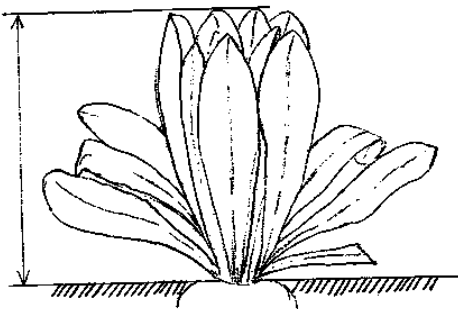


1  
circular

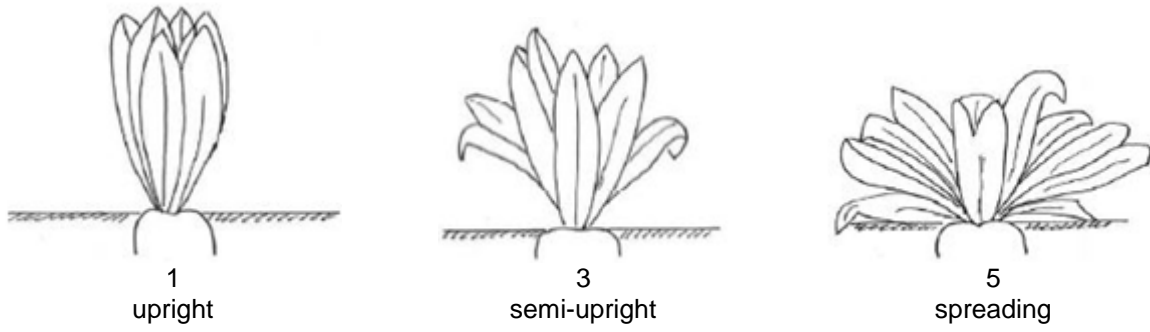


3  
elliptic

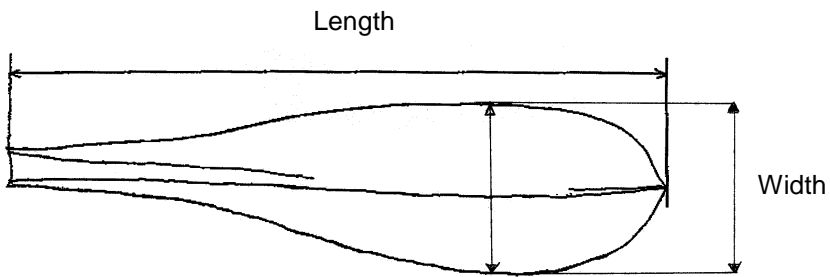
#### Ad. 2: Plant: height



Ad. 3: Plant: habit



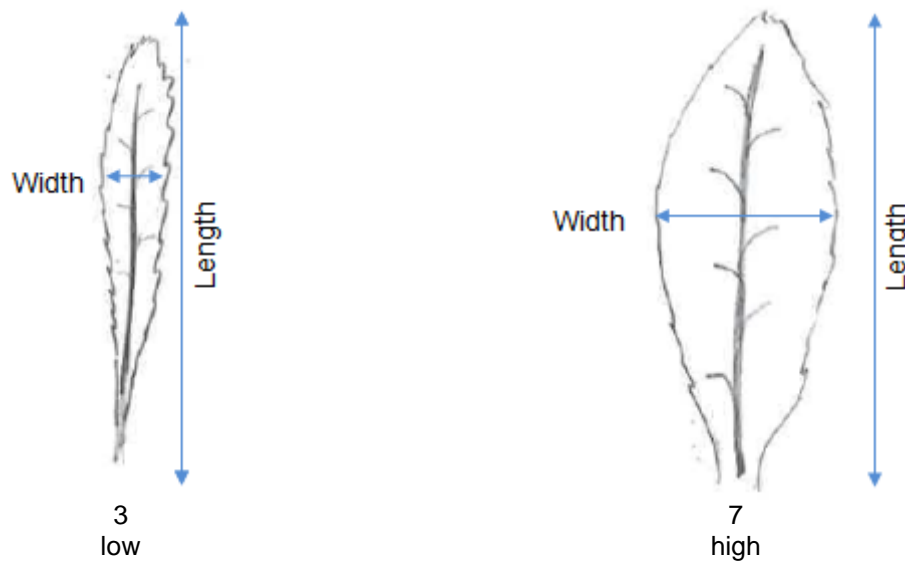
Ad. 4: Leaf: length



Ad. 5 Leaf: width

See Ad. 4

Ad. 6: Leaf: ratio width/length

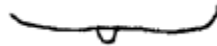




Ad. 10: Leaf: shape in cross section



1  
concave



2  
flat



3  
convex

Ad. 14: Leaf: number of incisions of basal part



1  
absent or very few



3  
few



5  
medium



7  
many

Ad. 15: Leaf: depth of incisions of basal part

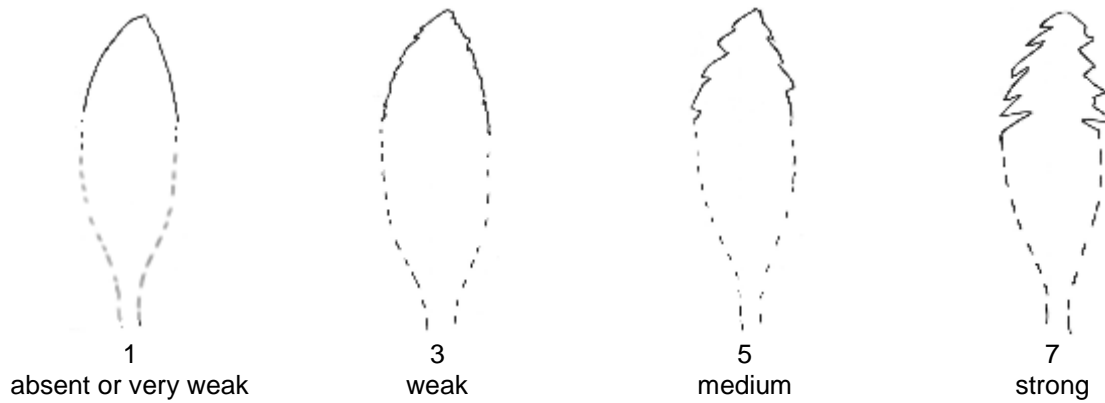


3  
shallow

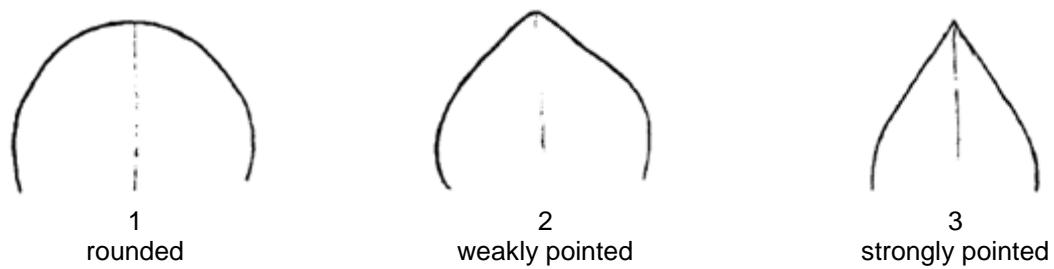


7  
deep

Ad. 16: Leaf: incisions of margin of upper third



Ad. 17: Leaf: shape of apex



Ad. 20: Flowering stem: height

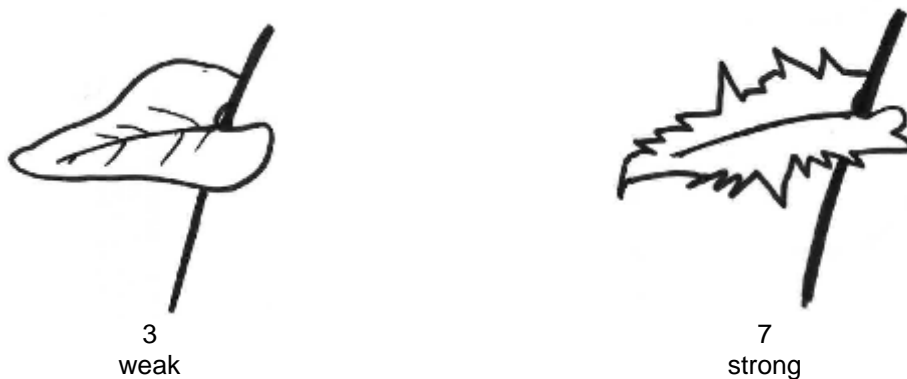
Observations should be made when the first flower opens.

Ad. 22: Flowering stem: size of stipule

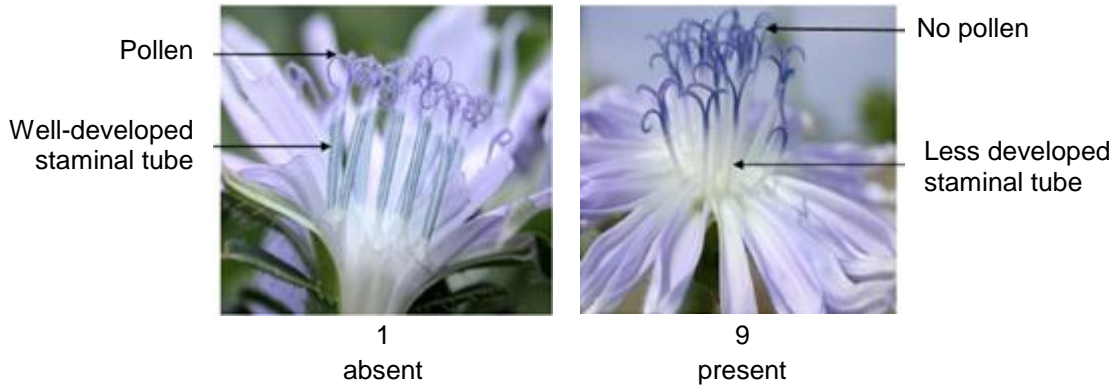
Observations should be made on the stipules of the upper third of the flowering stem.

Ad. 23: Flowering stem: dentation of stipule

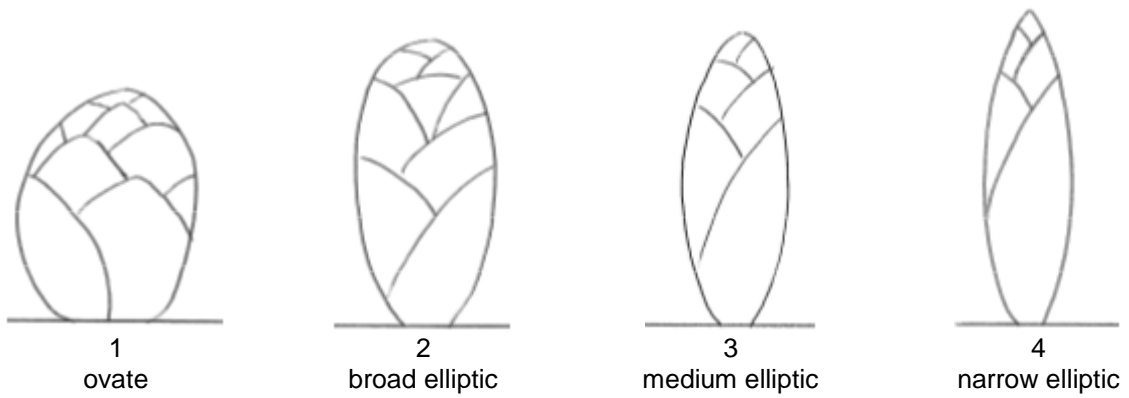
Observations should be made on the stipules of the upper third of the flowering stem.



Ad. 25: Male sterility



Ad. 29: Head: shape in longitudinal section



Ad. 34: Head: openness of apex



Ad. 35: Head: length of axis

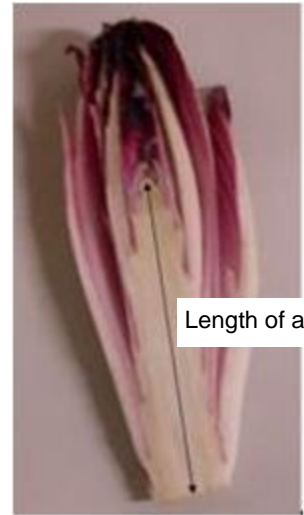
At the end of the forcing period, the length of axis is observed disregarding the length of the head (see Characteristic 26).



3  
short



5  
medium



7  
long

9. Literature

Annon, C. R., 1970: La chicorée de Bruxelles, Symposium International à Gembloux (B), 17 et 18 février (Eucarpia), Ed. Min. de l'Agriculture, Recherche Agronomique, Bruxelles, BE

Leteinturier, J. E. A., 1983: L'endive (chicorée witloof), 3e ed., CTIFL, Paris, FR

Ryder, E. J., 1979: Leafy Salad Vegetables, AVI Publishing Company, Westport, Connecticut, US

Willocx, H., 1993: Witloofteelt, 3e uitgave, Ed. Ministerie van Landbouw, Bestuur voor de Land-en Tuinbouw, Dienst Informatie, Brussel, BE

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	<input type="text" value="Cichorium intybus L."/> [ ]
1.1.2	Common name	<input type="text" value="Witloof chicory"/>
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

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:
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4.2	Method of propagating the variety	
4.2.1	Seed-propagated varieties	
(a)	Self-pollination	[ ]
(b)	Cross-pollination	[ ]
(i)	Synthetic variety	[ ]
(ii)	Population	[ ]
(c)	Hybrid	[ ]
(d)	Other (please provide details)	[ ]
	<input type="text"/>	
4.2.2	Other (Please provide details)	[ ]
	<input type="text"/>	



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 Leaf: length</b> <b>(4)</b>		
very short		1 [ ]
very short to short		2 [ ]
short	Janus	3 [ ]
short to medium		4 [ ]
medium	Ecrine, Omblin	5 [ ]
medium to long		6 [ ]
long	Atlas, Platine	7 [ ]
long to very long		8 [ ]
very long	Zilia	9 [ ]
<b>5.2 Leaf: width</b> <b>(5)</b>		
very narrow		1 [ ]
very narrow to narrow		2 [ ]
narrow	Monroe, Redoria	3 [ ]
narrow to medium		4 [ ]
medium	Baccara, Bea, Extral, Flash, Zoom	5 [ ]
medium to broad		6 [ ]
broad	Atlas, Symphonie	7 [ ]
broad to very broad		8 [ ]
very broad		9 [ ]
<b>5.3 Leaf: color</b> <b>(7)</b>		
only green	Excellence, Focus, Genie, Janus	1 [ ]
green and red	Festive	2 [ ]
only red	Carla, Redoria	3 [ ]
<b>5.4 Leaf: intensity of color</b> <b>(8)</b>		
very light		1 [ ]
very light to light		2 [ ]
light		3 [ ]
light to medium		4 [ ]
medium	Excellence, Festive, Janus, Redoria	5 [ ]
medium to dark		6 [ ]
dark	Carla, Focus, Genie	7 [ ]
dark to very dark		8 [ ]
very dark		9 [ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
<b>5.5 Time of beginning of flowering (19)</b>		
very early		1 [ ]
very early to early		2 [ ]
early	Jadore Prestance, Takine	3 [ ]
early to medium		4 [ ]
medium	Abellis, Bea, Ecrine, Hermès, Omblin	5 [ ]
medium to late		6 [ ]
late	Flexine	7 [ ]
late to very late		8 [ ]
very late		9 [ ]
<b>5.6 Male sterility (25)</b>		
absent	Flash	1 [ ]
present	Omblin	9 [ ]
<b>5.7 Head: length (26)</b>		
very short		1 [ ]
very short to short		2 [ ]
short		3 [ ]
short to medium		4 [ ]
medium	Bea, Omblin	5 [ ]
medium to long		6 [ ]
long	Focus, Perfo, Prestance	7 [ ]
long to very long		8 [ ]
very long	Normale	9 [ ]
<b>5.8 Head: shape in longitudinal section (29)</b>		
ovate	Abellis, Selkis	1 [ ]
broad elliptic	Crenoline, Topmodel	2 [ ]
medium elliptic	Excellence, Jocker	3 [ ]
narrow elliptic	Symphonie	4 [ ]

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>Leaf: blistering</i>	<i>weak</i>	<i>strong</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]