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TG/173/4(proj.5)
ORIGINAL: English
DATE: 2016-11-03

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

WITLOOF CHICORY

UPOV Code(s):

CICHO_INT

Cichorium intybus L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from France
to be considered by the
Enlarged Editorial Committee
at its meeting, to be held in Geneva,
from 2017-01-11 to 2017-01-12

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Cichorium intybus L.	Chicory	Chicorée, Endive	Salatzichorie, Wurzelzichorie	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/172/4) and Leaf Chicory (TG/154/3)

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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/172/4) and leaf chicory (TG/154/3).

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

3.1.3 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 second column of 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 The assessment of uniformity for open-polinated varieties should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.2.3 The assessment of uniformity for hybrid varieties depends on the type of hybrid and should be according to the recommendations for hybrid 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 recognisable 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 recognisable 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 recognisable 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:

State	*Note*
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	*Note*
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 “Development of Test Guidelines”.

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

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

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression
QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)
MG, MS, VG, VS – see Chapter 4.1.5

5 (+) See Explanations on the Table of Characteristics in Chapter 8.2

6 (a)-(e) 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 Beispielssorten Variedades ejemplo	Note/ Nota
1.		**QN VG**	**(+)**				
		Cotyledon: shape	**Cotylédon : forme**	**Keimblatt: Form**	**Cotiledón: forma**		
		rounded				Bea, Flash, Magnum	1
		broad elliptic					2
		elliptic				Takine, Zoom	3
2.	**(*)**	**QN MS/VG**	**(+) (a)**				
		Plant: height	**Plante: hauteur**	**Pflanze: Höhe**	**Planta: altura**		
		short	basse	niedrig	baja	Janus	3
		medium	moyenne	mittel	media	Ecrine, Selkis	5
		tall	haute	hoch	alta	Topmodel, Zilia	7
3.	**(*)**	**QN VG**	**(+) (a)**				
		Foliage: attitude	**Feuillage: port**	**Laub: Haltung**	**Follaje: porte**		
		erect	dressé	aufrecht	erecto		1
		semi-erect	demi-dressé	halbaufrecht	semierecto	Ecrine, Ombline	3
		horizontal	horizontal	waagerecht	horizontal	Perfo	5
4.	**(*)**	**QN MS/VG**	**(a), (b)**				
		Leaf: length					
		short				Janus	3
		medium				Ecrine, Ombline	5
		long				Atlas, Platine	7
		very long				Zilia	9
5.	**(*)**	**QN MS/VG**	**(a), (b)**				
		Leaf: width	**Feuille : largeur**	**Blatt: Breite**	**Hoja: anchura**		
		narrow	étroite	schmal	estrecha	Monroe, Redoria	3
		medium	moyenne	mittel	media	Baccara, Bea, Extral, Flash, Zoom	5
		broad	large	breit	ancha	Atlas, Symphonie	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6.		**QN MS/VG**	**(+) (a), (b)**				
		Leaf: ratio width/length	**Feuille: rapport longueur/largeur**	**Blatt Verhältnis Länge/Breite**	**Hoja: relación longitud/anchura**		
		low	faible	klein	baja	Zilia	3
		medium	moyen	mittel	media	Baccara, Bea, Ecrine	5
		high	élevé	groß	alta	Selkis	7
7.	**(*)**	**PQ VG**		**(a)**			
		Leaf: color					
		only green				Genie	1
		green and red				Festive	2
		only red				Carla, Redoria	3
8.	**(*)**	**QN VG**		**(a)**			
		Leaf: intensity of color					
		light					3
		medium				Excellence, Janus	5
		dark				Focus	7
9.	**(*)**	**QN VG**		**(a)**			
		Leaf: glossiness					
		absent or very weak					1
		weak				Abellis, Flash	2
		medium				Baccara, Fakir	3
		strong				Rikita	4
		very strong					5
10.	**(*)**	**QN VG**	**(+)**	**(a)**			
		Leaf: shape in cross-section	**Feuille : forme en section transversale**	**Blatt: Form im Querschnitt**	**Hoja: forma en sección transversal**		
		concave				Abellis, Crenoline	1
		flat				Excellence, Perfo, Zilia, Zoom	2
		convex					3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11.	**(*)**	**QN VG**	**(a)**				
		Leaf: blistering	**Feuille : cloqûre**	**Blatt: Blasigkeit**	**Hoja: abullonado**		
		absent or very weak					1
		weak				Abellis, Flash, Platine	3
		medium				Alliance, Ecrine	5
		strong				Rikita, Zoom	7
12.		**QN VG**	**(a)**				
		Leaf: anthocyanin coloration of midrib	**Feuille: pigmentation anthocyanique de la nervure médiane**	**Blatt: Anthocyanfärbung der Mittelrippe**	**Hoja: pigmentación antociánica del nervio central**		
		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
13.		**QN VG**	**(a)**				
		Leaf: undulation of margin	**Feuille: ondulation du bord**	**Blatt: Wellung des Randes**	**Hoja: ondulación del borde**		
		weak	faible	gering	débil		3
		medium	moyenne	mittel	media	Atlas, Baccara, Platine	5
		strong	forte	stark	fuerte	Montblanc	7
14.		**QN VG**	**(+)** **(a)**				
		Leaf: incisions of basal part					
		absent or very few					1
		few				Crenoline, Selkis	3
		medium				Alliance, Bea, Topscore	5
		many				Atlas, Zilia	7
15.		**QN VG**	**(+)** **(a)**				
		Leaf: depth of incisions of basal part					
		shallow				Abellis, Desir, Flash, Zoom	3
		medium				Baccara, Ombline, Symphonie	5
		deep				Rikita	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16.	**(*)**	**QN VG**	**(+) (a)**				
		Leaf: incisions of margin of upper third					
		absent or very weak				Selkis	1
		weak				Abellis, Flash, Janus, Topscore	3
		medium				Baccara, Jocker, Symphonie, Zoom	5
		strong				Platine	7
17.		**QN VG**	**(+) (a)**				
		Leaf: shape of apex					
		rounded				Abellis, Magnum, Topscore	1
		weakly pointed				Atlas, Fakir, Takine	2
		strongly pointed				Platine	3
18.		**QN VG**	**(+) (c)**				
		Bolting tendency					
		weak				Bea, Montblanc	3
		medium				Flash, Ombline	5
		strong				Topmodel	7
19.	**(*)**	**QN MS/VG**	**(c)**				
		Time of beginning of flowering	**Époque du début de la floraison**	**Zeitpunkt des Blühbeginns**	**Época de inicio de la floración**		
		early				Jadore, Prestance, Takine	3
		medium				Abellis, Bea, Ecrine, Hermès, Ombline	5
		late				Flexine	7
20.		**QN MS/VG**	**(+) (c)**				
		Flowering stem: height	**Tige florifère: hauteur**	**Blütenstandstiel: Höhe**	**Tallo floral: altura**		
		short					3
		medium				Desir, Perfo	5
		tall				Atlas, Festive, Selkis	7

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21.		**QN**	**VG**		**(c)**				
		Flowering stem: branching		**Tige florifère: ramification**		**Blütenstandstiel: Verzweigung**	**Tallo floral: ramificación**		
		weak							3
		medium						Atlas, Ecrine, Perfo	5
		strong						Abellis	7
22.		**QN**	**MS/VG**	**(+)**	**(c)**				
		Flowering stem: size of stipule							
		small						Crenoline, Excellence, Magnum	3
		medium						Bea, Desir, Festive, Topmodel	5
		large							7
23.		**QN**	**VG**	**(+)**	**(c)**				
		Flowering stem: dentation of stipule							
		weak						Alliance, Elegance, Flash, Jadore	3
		medium						Abellis, Platine	5
		strong							7
24.	**(*)**	**PQ**	**VG**		**(c)**				
		Flower: color		**Fleur : couleur**		**Blüte: Farbe**	**Flor: color**		
		white							1
		pink						Selkis	2
		blue						Bea, Flash	3
25.	**(*)**	**QL**	**VS**	**(+)**					
		Male sterility		**Stérilité mâle**		**Männliche Sterilität**	**Androesterilidad**		
		absent						Flash	1
		present						Ombline	9

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26.	**(*)**	**QN MS/VG**	**(d), (e)**				
		Head: length					
		very short					1
		short					3
		medium				Bea, Ombline	5
		long				Focus, Perfo, Prestance	7
		very long				Normale	9
27.	**(*)**	**QN MS/VG**	**(d), (e)**				
		Head: diameter					
		small					3
		medium				Bea, Ecrine	5
		large				Zilia	7
28.		**QN MS/VG**	**(d), (e)**				
		Head: ratio diameter/length					
		low				Opale	3
		medium				Bea, Desir, Panache	5
		high				Atlas, Focus	7
29.	**(*)**	**PQ VG**	**(+) (d), (e)**				
		Head: shape in longitudinal section	**Pomme: forme en section longitudinale**	**Kopf: Form in Längsschnitt**	**Cabeza: forma en sección longitudinal**		
		ovate				Abellis, Selkis	1
		broad elliptic				Crenoline, Topmodel	2
		medium elliptic				Excellence, Jocker	3
		narrow elliptic				Symphonie	4
30.	**(*)**	**QN VG**	**(d), (e)**				
		Head: shape of apex					
		rounded				Abellis, Crenoline	1
		weakly pointed				Baccara, Elegance	2
		strongly pointed				Fakir, Symphonie, Zoom	3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
31.	**(*)**	**PQ VG**	**(+) (d), (e)**				
		Head: color of leaf blade					
		only yellow				Flexine	1
		yellow and red					2
		only red				Festive	3
32.	**(*)**	**QN VG**	**(d), (e)**				
		Head: intensity of color of leaf blade					
		light				Elegance, Perfo	3
		medium				Baccara, Ombline	5
		dark				Abellis, Ecrine	7
33.		**QN VG**	**(d), (e)**				
		Head: blistering of leaf blade					
		absent or very weak				Hermès, Topmodel	1
		weak					3
		medium				Baccara, Festive, Zoom	5
		strong					7
34.		**QN VG**	**(+) (d), (e)**				
		Head: openness of apex					
		closed				Baccara, Hermès	1
		half open				Abellis, Zilia	2
		fully open				Sirion	3
35.		**QN VG**	**(+) (d), (e)**				
		Head: length of axis					
		very short				Selkis	1
		short				Extral	3
		medium				Ecrine, Takine	5
		long				Atlas, Zilia	7
		very long					9

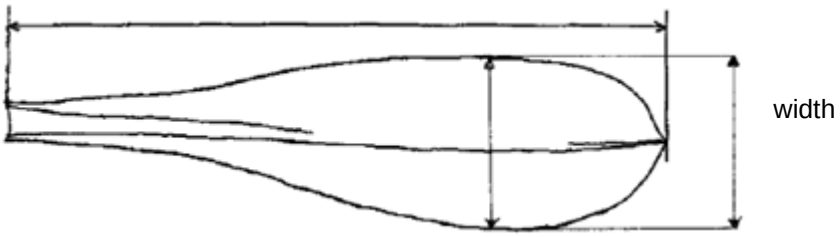
8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Observations should be made when leaves are fully developed.

(b)



(c) Bolting and flowering characteristics : 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.

(d) Head: observations should be made after a forcing period in a completely dark environment and before exposure to daylight.

(e) 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 mid-January (the normal forcing period; i.e. in North of France-Belgium-Netherlands-Luxembourg = January-February) 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).

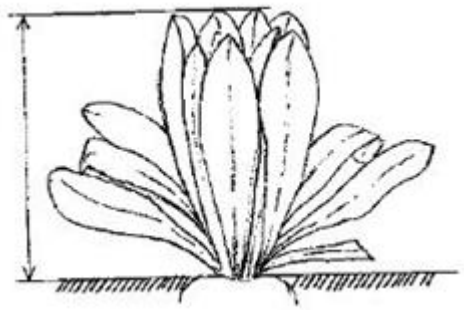
8.2 Explanations for individual characteristics

Ad. 1: Cotyledon: shape

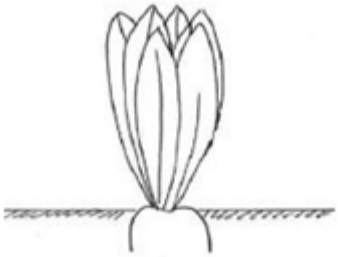
1
rounded

3
elliptic

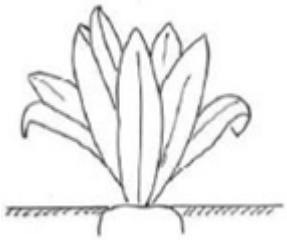
Ad. 2: Plant: height



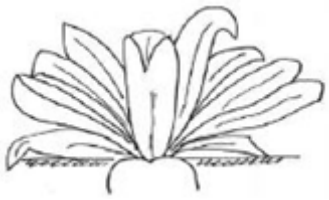
Ad. 3: Foliage: attitude



1
erect

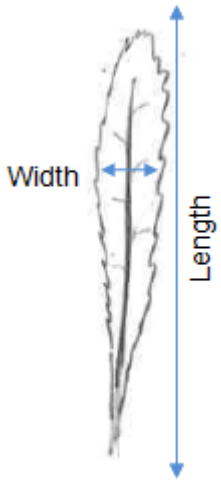


3
semi-erect

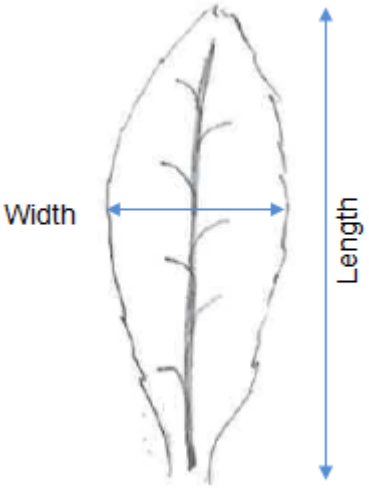


5
horizontal

Ad. 6: Leaf: ratio width/length



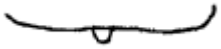
3
low



7
high

Ad. 10: Leaf: shape in cross-section

1
concave



2
flat

3
convex

Ad. 14: Leaf: 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

1
absent or very weak

3
weak

5
medium

7
strong

Ad. 17: Leaf: shape of apex

1
rounded

2
weakly pointed

3
strongly pointed

Ad. 18: Bolting tendency

The bolting tendency indicates the susceptibility or resistance to bolting by varieties exposed to an early sowing and the same cold temperature in order to start bolting.

Ad. 20: Flowering stem: height

The height of the stem is measured when the first flower opens.

Ad. 22: Flowering stem: size of stipule

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

Ad. 23: Flowering stem: dentation of stipule

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

3
weak

7
strong

Ad. 25: Male sterility

Pollen

Well-developed staminal tube

1
absent

9
present

No pollen

Less developed staminal tube

Ad. 29: Head: shape in longitudinal section

1
ovate

2
broad elliptic

3
medium elliptic

4
narrow elliptic

Ad. 31: Head: color of leaf blade
Ad. 33: Head: intensity of color of leaf blade

Observations should be made excluding the midrib.

Head: intensity of color of leaf blade (Char. 33)	**Head: color of leaf blade (Char. 32)**		
	1 only yellow	2 yellow and red	3 only red
3 light	Perfo		
5 medium	Harmonie		Selkis
7 dark	Takine		Festive

Ad. 34: Head: openness of apex

1
closed

3
fully open

Ad. 35: Head: length of axis

At the end of the forcing period (see (e)), the length of axis is measured/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

Leteinturier, J. E. A., 1983 :“L'endive (chicorée witloof),” 3e ed., CTIEF, Paris, France Ryder, E. J., 1979: Leafy Salad Vegetables, AVI Publishing Company, Westport, Connecticut

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

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	*Cichorium intybus* L.	[ ]
1.1.2	Common name	Chicory	
1.2.1	Botanical name	*Cichorium intybus* L	[ ]
1.2.2	Common name	Witloof chicory	

2. Applicant

Name	
Address	
Telephone No.	
Fax No.	
E-mail address	
Breeder (if different from applicant)	

3. Proposed denomination and breeder's reference

Proposed denomination (if available)	
Breeder's reference	

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

#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

4.1.2 Mutation [ ]

(please state parent variety)

4.1.3 Discovery and development [ ]

(please state where and when discovered and how developed)

4.1.4 Other [ ]

(please provide details)

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

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

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

(a)	Self-pollination	[ ]
(b)	Cross-pollination	[ ]
(i)	Synthetic variety	[ ]
(ii)	Population	[ ]
(c)	Hybrid	[ ]
(d)	Other (please provide details)	[ ]

4.2.2 Other [ ]
(Please provide details)

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

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

	Characteristics	Example Varieties	Note
5.1 (4)	**Leaf: length**		
	very short		1 [ ]
	very short to short		2 [ ]
	short	Janus	3 [ ]
	short to medium		4 [ ]
	medium	Ecrine, Ombline	5 [ ]
	medium to long		6 [ ]
	long	Atlas, Platine	7 [ ]
	long to very long		8 [ ]
	very long	Zilia	9 [ ]
5.2 (5)	**Leaf: width**		
	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 [ ]
5.3 (7)	**Leaf: color**		
	only green	Genie	1 [ ]
	green and red	Festive	2 [ ]
	only red	Carla, Redoria	3 [ ]

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

	Characteristics	Example Varieties	Note
5.4 (8)	**Leaf: intensity of color**		
	very light		1 [ ]
	very light to light		2 [ ]
	light		3 [ ]
	light to medium		4 [ ]
	medium	Excellence, Janus	5 [ ]
	medium to dark		6 [ ]
	dark	Focus	7 [ ]
	dark to very dark		8 [ ]
	very dark		9 [ ]
5.5 (25)	**Male sterility**		
	absent	Flash	1 [ ]
	present	Ombline	9 [ ]
5.6 (26)	**Head: length**		
	very short		1 [ ]
	very short to short		2 [ ]
	short		3 [ ]
	short to medium		4 [ ]
	medium	Bea, Ombline	5 [ ]
	meidum to long		6 [ ]
	long	Focus, Perfo, Prestance	7 [ ]
	long to very long		8 [ ]
	very long	Normale	9 [ ]
5.7 (29)	**Head: shape in longitudinal section**		
	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:

6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example	*Male sterility*	*absent*	*present*

Comments:

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

#7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [ ] No [ ]

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes [ ] No [ ]

(If yes, please provide details)

7.3 Other information

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

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

8. Authorization for release

(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?

Yes [ ] No [ ]

(b) Has such authorization been obtained?

Yes [ ] No [ ]

If the answer to (b) is yes, please attach a copy of the authorization.

9. Information on plant material to be examined or submitted for examination

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

(a)	Microorganisms (e.g. virus, bacteria, phytoplasma)	Yes [ ]	No [ ]
(b)	Chemical treatment (e.g. growth retardant, pesticide)	Yes [ ]	No [ ]
(c)	Tissue culture	Yes [ ]	No [ ]
(d)	Other factors	Yes [ ]	No [ ]

Please provide details for where you have indicated “yes”.

.....

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant’s name

Signature Date

[End of document]