CPVO-TP/173/1 Final
English
Date: 25/03/2004

EUROPEAN UNION

COMMUNITY PLANT VARIETY OFFICE

PROTOCOL FOR DISTINCTNESS, UNIFORMITY AND STABILITY TESTS

***Cichorium intybus* L. partim**

WITLOOF, CHICORY

UPOV Species Code: CHICO_INT

Adopted on 25/03/2004

I SUBJECT OF THE PROTOCOL

The protocol describes the technical procedures to be followed in order to meet the Council Regulation 2100/94 on Community Plant Variety Rights. The technical procedures have been agreed by the Administrative Council and are based on general UPOV Document TG/1/3 and UPOV Guideline TG/173/3 dated 05/04/2000 for the conduct of tests for Distinctness, Uniformity and Stability. This protocol applies to all varieties of *Cichorium intybus* L. partim of the family *Compositae*, excluding industrial chicory (CPVO-TP/172/1) and leaf chicory (UPOV-TG/154/3).

II SUBMISSION OF SEED AND OTHER PLANT MATERIAL

1. The Community Plant Variety Office (CPVO) is responsible for informing the applicant of

   - the closing date for the receipt of plant material;
   - the minimum amount and quality of plant material required;
   - the examination office to which material is to be sent.

   A sub-sample of the material submitted for test will be held in the variety collection as the definitive sample of the candidate variety.

   The applicant is responsible for ensuring compliance with any customs and plant health requirements.

2. Final dates for receipt of documentation and material by the Examination Office

   The final dates for receipt of requests, technical questionnaires and the final date or submission period for plant material will be decided by the CPVO and each Examination Office chosen.

   The Examination Office is responsible for immediately acknowledging the receipt of requests for testing, and technical questionnaires. Immediately after the closing date for the receipt of plant material the Examination Office should inform the CPVO whether acceptable plant material has been received or not. However if unsatisfactory plant material is submitted the CPVO should be informed as soon as possible.

3. Plant material requirements

   The final dates for request for technical examination and sending of Technical Questionnaire by the CPVO as well as submission date of plant material by the applicant can be found in the S2 supplement of the CPVO Official Gazette and the CPVO website (www.cpvo.europa.eu).

Quality of seed: ..... Should not be less than the standards laid down for certified seed in Annex 2 of Council Directive 2002/55/EC.

Quality of plants: ..... Should not be less than the standards laid down for plants in EC Directive 92/33 and implementing measures.

Seed Treatment: ..... The plant material must not have undergone any treatment unless the CPVO and the examination office allow or request such treatment. If it has been treated, full details of the treatment must be given.

Special requirements: ..... -

Labelling of sample: ..... - Species
- File number of the application allocated by the CPVO
- Breeder's reference
- Examination reference (if known)
- Name of applicant
- The phrase "On request of the CPVO"
- In the case of a split sample, the quantity of seed being submitted.

III CONDUCT OF TESTS

1. Variety collection

A variety collection will be maintained for the purpose of establishing distinctness of the candidate varieties in test. A variety collection may contain both living material and descriptive information. A variety will be included in a variety collection only if plant material is available to make a technical examination.

Pursuant to Article 7 of Council Regulation No. 2100/94, the basis for a collection should be the following:

- varieties listed or protected at the EU level or at least in one of the EEA Member States;
- varieties protected in other UPOV Member States;
- any other variety in common knowledge.

The composition of the variety collection in each Examination Office depends on the environmental conditions in which the Examination Office is located.

Variety collections will be held under conditions which ensure the long term maintenance of each accession. It is the responsibility of Examination Offices to replace reference material which has deteriorated or become depleted. Replacement material can only be introduced if appropriate tests confirm conformity with the existing reference material. If any difficulties arise for the replacement of reference material Examination Offices must inform the CPVO. If authentic plant material of a variety cannot be supplied to an Examination Office the variety will be removed from the variety collection.

2. Material to be examined

Candidate varieties will be directly compared with other candidates for Community plant variety rights tested at the same Examination Office, and with appropriate varieties in the variety collection. When necessary an Examination Office may also include other candidates and varieties. Examination Offices should therefore make efforts to co-ordinate the work with other Offices involved in DUS testing of witloof chicory. There should be at least an exchange of technical questionnaires for each candidate variety, and during the test period, Examination Offices should notify each other and the CPVO of candidate varieties which are likely to present problems in establishing distinctness. In order to solve particular problems Examination Offices may exchange plant material.

3. Characteristics to be used

The characteristics to be used in DUS tests and preparation of descriptions shall be those referred to in the Annex 2. All the characteristics shall be used, providing that observation of a characteristic is not rendered impossible by the expression of any other characteristic, or the expression of a characteristic is prevented by the environmental conditions under which the test is conducted. In the latter case, the CPVO should be informed. In addition the existence of some other regulation e.g. plant health, may make the observation of the characteristic impossible.

The Administrative Council empowers the President, in accordance with Article 23 of Commission Regulation N° 1239/95, to insert additional characteristics and their expressions in respect of a variety.

4. Grouping of varieties

The varieties and candidates to be compared will be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety and which in their various states of expression are fairly evenly distributed throughout the collection. In the case of continuous grouping characteristics overlapping states of expression between adjacent groups is required to reduce the risks of incorrect allocation of candidates to groups. The characteristics which may be used for grouping are the following:

(a) Leaf: length (characteristic 6)

(b) Leaf: intensity of green colour (characteristic 10)

(c) Time of flowering (characteristic 22)

(d) Male sterility (characteristic 28)

(e) Head: length (characteristic 29)

(f) Head: shape in longitudinal section (characteristic 32)

5. Trial designs and growing conditions

The minimum duration of tests will normally be two independent growing cycles. For vegetatively propagated varieties, the duration of the testing may be reduced to one growing cycle if the results on distinctness and uniformity are conclusive. Tests will be carried out under conditions ensuring normal growth. The size of the plots will be such that plants or parts of plants may be removed for measuring and counting without prejudice to the observations which must be made up to the end of the growing period.

The test design is as follows

As a minimum, each test should include a total of 100 plants which should be divided between two or more replicates.

All observations determined by measurements or counting should be made on 60 plants or parts of 60 plants.

All observations on the leaf should be made on the full-grown leaf.

All observations on the head should be made at the time of harvesting of the heads before exposure to sunlight.

6. Special tests

In accordance with Article 83(3) of Council Regulation No. 2100/94 an applicant may claim either in the Technical Questionnaire or during the test that a candidate has a characteristic which would be helpful in establishing distinctness. If such a claim is made and is supported by reliable technical data, a special test may be undertaken providing that a technically acceptable test procedure can be devised.

Special tests will be undertaken, with the agreement of the President of CPVO, where distinctness is unlikely to be shown using the characters listed in the protocol.

7. Standards for decisions

a) **Distinctness**

A candidate variety will be considered to be distinct if it meets the requirements of Article 7 of Council Regulation No. 2100/94.

b) **Uniformity**

For the assessment of uniformity of open-pollinated varieties, relative uniformity standards should be used.

For the assessment of uniformity of hybrid varieties a population standard of 1% with an acceptance probability of at least 95% should be applied to off-types excluding clearly recognisable inbred plants. In addition a population standard of 3% with the same acceptance probability should be applied to clearly recognisable inbred plants in hybrids where male sterility has been used; a population standard of 5% with the same acceptance probability should be applied to clearly recognisable inbred plants in hybrids where male sterility has not been used.

Table of maximum numbers of off-types allowed for uniformity standards in hybrid varieties.

Number of plants	off-types allowed
36-82	2
83-137	3

Table of maximum numbers of off-types allowed for uniformity standards in clearly recognisable inbred plants where male sterility has been used.

Number of plants	off-types allowed
28-46	3
47-66	4

Table of maximum numbers of off-types allowed for uniformity standards in clearly recognisable inbred plants where male sterility has not been used.

Number of plants	off-types allowed
29-40	4
41-53	5
54-67	6

c) **Stability**

A candidate will be considered to be sufficiently stable when there is no evidence to indicate that it lacks uniformity.

IV REPORTING OF RESULTS

After each recording season the results will be summarised and reported to the CPVO in the form of a UPOV model interim report in which any problems will be indicated under the headings distinctness, uniformity and stability. Candidates may meet the DUS standards after two growing periods but in some cases three growing periods may be required. When tests are completed the results will be sent by the Examination Office to the CPVO in the form of a UPOV model final report.

If it is considered that the candidate complies with the DUS standards, the final report will be accompanied by a variety description in the format recommended by UPOV. If not the reasons for failure and a summary of the test results will be included with the final report.

The CPVO must receive interim reports and final reports by the date agreed between the CPVO and the examination office.

Interim reports and final examination reports shall be signed by the responsible member of the staff of the Examination Office and shall expressly acknowledge the exclusive rights of disposal of CPVO.

V LIAISON WITH THE APPLICANT

If problems arise during the course of the test the CPVO should be informed immediately so that the information can be passed on to the applicant. Subject to prior agreement, the applicant may be directly informed at the same time as the CPVO particularly if a visit to the trial is advisable.

The interim report as well as the final report shall be sent by the Examination Office to the CPVO.

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ANNEXES TO FOLLOW

ANNEX I

PAGE

ANNEX II

ANNEX I

TABLE OF CHARACTERISTICS TO BE USED IN DUS-TEST AND PREPARATION OF DESCRIPTIONS

CPVO N°	UPOV N°	Characteristics	Examples	Note
1.	**1.**	**Cotyledon: shape**		
		rounded	Bea, Flash, Toner	1
		elliptic	Aline, Daliva	2
2.	**2.**	**Cotyledon: shape of tip**		
		truncate	Aline, Conrad, Jaz	1
		rounded	Bergère, Videna	2
3.	**3.**	**Plant: height at vegetative stage**		
(+)		short		3
		medium	Flash, Marriott	5
		tall	Dirv	7
4.	**4.**	**Foliage: attitude**		
		erect	Dirv	1
		semi-erect	Flash, Turbo	3
		horizontal		5
5.	**5.**	**Leaf: attitude of tip**		
		erect		1
		semi-erect	Turbo	3
		horizontal		5
6.	**6.**	**Leaf: length**		
(+)		short	Carla, Conrad	3
		medium	Elsa, Flash, Marriott	5
		long	Turbo	7
G		very long	Vilmorin No. 5	9

CPVO N°	UPOV N°	Characteristics	Examples	Note
7.	**7.**	**Leaf: width**		
(+)		narrow	Carla	3
		medium	Bea, Flash, Zoom	5
		broad	Nica, Quartz	7
8.	**8.**	**Leaf: ratio length/width**		
		small	Vitessa	3
		medium	Bea	5
		large	Senator	7
9.	**9.**	**Leaf: colour**		
		only green	Zoom	1
		only red	Carla	2
		green and red	Rubina	3
10.	**10.**	**Leaf: intensity of green colour**		
		light	Jaz	3
		medium	Bea, Toner	5
G		dark	Conrad, Magic, Zoom	7
11.	**11.**	**Leaf: glossiness**		
		absent or very weak		1
		weak	Flash, Rinof	3
		medium	Toner	5
		strong	Dirv, Magic, Quartz	7
12.	**12.**	**Leaf: shape in cross section**		
		concave		1
		flat	Zoom	2
		convex	Dirv	3

CPVO N°	UPOV N°	Characteristics	Examples	Note
13.	**13.**	**Leaf: blistering**		
		absent or very weak	Rinof	1
		weak	Flash, Quartz	3
		medium		5
		strong	Monitor, Zoom	7
14.	**14.**	**Leaf: anthocyanin coloration of midrib**		
		absent or very weak	Dirv, Jaz, Spectra	1
		weak	Flash	3
		medium	Carla, Sigma, Zoom	5
		strong	Victoria	7
15.	**15.**	**Leaf: undulation of margin**		
		weak	Venus	3
		medium	Atlas	5
		strong	Sigma	7
16.	**16.**	**Leaf: incisions of basal part**		
		absent or very weak		1
		weak	Monitor	3
		medium	Bea	5
		strong	Victoria	7
17.	**17.**	**Leaf: incisions of margin of upper third**		
		absent or very weak		1
		weak	Flash, Toner	3
		medium	Zoom	5
		strong	Victoria	7

CPVO N°	UPOV N°	Characteristics	Examples	Note
18.	**18.**	**Leaf: depth of incisions of margin of upper third**		
		shallow	Flash, Zoom	3
		medium		5
		deep		7
19.	**19.**	**Leaf: shape of tip**		
(+)		rounded	Rumba	1
		weakly pointed	Mona	2
		strongly pointed	Magic	3
20.	**20.**	**Root: size**		
		small		3
		medium	Bea	5
		large	Focus	7
21.	**21.**	**Bolting tendency (from an early sowing)**		
		absent or very weak	Carla	1
		weak	Bea	3
		medium	Flash	5
		strong	Quartz	7
		very strong	Vilmorin No. 5	9
22.		**Time of flowering**		
		very early		1
		early		3
		medium		5
		late		7
G		very late		9

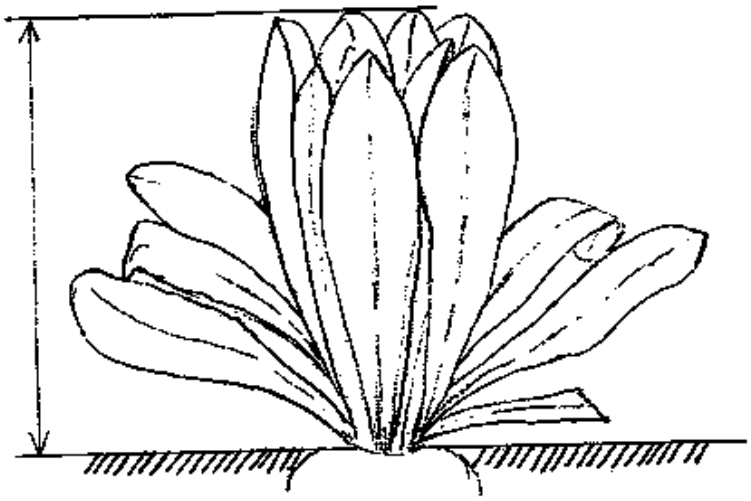
CPVO N°	UPOV N°	Characteristics	Examples	Note
23.	**22.**	**Flowering stem: height**		
		short		3
		medium	Samba	5
		tall	Final	7
24.	**23.**	**Flowering stem: branching**		
		weak		3
		medium	Jaz	5
		strong	Final	7
25.	**24.**	**Flowering stem: size of stipule**		
		small	Magnum	3
		medium	Bea	5
		large	Maraichere	7
26.	**25.**	**Flowering stem: dentation of stipule**		
		small	Flash	3
		medium	Terosa	5
		large		7
27.	**26.**	**Flower: colour**		
		white		1
		pink		2
		blue	Bea	3
28.		**Male sterility**		
		absent		1
G		present		9

CPVO N°	UPOV N°	Characteristics	Examples	Note
29.	**27.**	**Head: length**		
		very short	Carla	1
		short	Mona	3
		medium	Bea, Monitor	5
		long	Faro, Focus, Revor	7
G		very long	Normale	9
30.	**28.**	**Head: maximum diameter**		
		small	Carla	3
		medium	Bea	5
		large	Mona	7
31.	**29.**	**Head: ratio length/diameter**		
		small	Mona	3
		medium	Bea	5
		large	Focus	7
32.	**30.**	**Head: shape in longitudinal section**		
		narrow elliptic		1
		elliptic	Dirv, Rinof	2
		broad elliptic		3
G		ovate	Histerra, Zoom	4
33.	**31.**	**Head: shape of apex**		
		rounded	Mona	1
		weakly pointed	Toner	2
		strongly pointed	Zoom	3
34.	**32.**	**Head: creamish hue of midrib**		
		absent	Zoom	1
		present	Caressa	2

CPVO N°	UPOV N°	Characteristics	Examples	Note
35.	**33.**	**Head: colour of leaf blade (outer side)**		
		green		1
		yellow		2
		red	Carla	3
36.	**34.**	**Head: intensity of colour of leaf blade**		
		light		3
		medium		5
		dark		7
37.	**35.**	**Head: blistering of leaf blade**		
		absent or very weak		1
		weak	Tabor	3
		medium	Ivora, Zoom	5
		strong	Roelof	7
38.	**36.**	**Head: closure of apex**		
		fully open		1
		half open		2
		closed		3
39.	**37.**	**Head: firmness**		
		loose		3
		medium	Bea	5
		firm	Zoom	7
40.		**Seed: colour**		
		white		1
		brown		2
		black		3

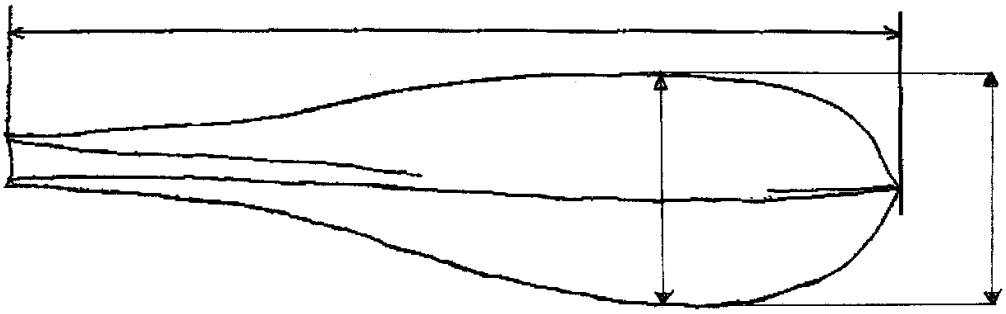
EXPLANATIONS AND METHODS

Ad. 3: Plant: height at vegetative stage

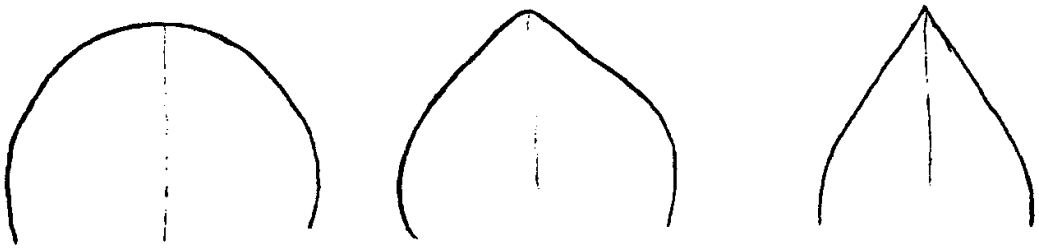


Ad. 6 and 7: Leaf: length (6) and width (7)

6



Ad. 19: Leaf: shape of tip



1
rounded

2
weekly pointed

3
strongly pointed

LITERATURE

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

Leteinturier, J. E. A., 1983:“L'endive (chicorée witloof),” 3e ed., CTIEF, Paris, France

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

ANNEX II

European Union
Community Plant Variety Office

TECHNICAL QUESTIONNAIRE

to be completed in connection with an application for Community Plant Variety Rights
Please answer all questions. A question without any answer will lead to a non-attribution of an application date. In cases where a field / question is not applicable, please state so.

1. **Botanical taxon:** Name of the genus, species or sub-species to which the variety belongs and common name

***Cichorium intybus* L. partim**

WITLOOF, CHICORY

2. **Applicant(s):** Name(s) and address(es), phone and fax number(s), Email address, and where appropriate name and address of the procedural representative

3. **Variety denomination**

a) Where appropriate proposal for a variety denomination:

b) Provisional designation (breeder's reference):

4. Information on origin, maintenance and reproduction of the variety

4.1 Breeding, maintenance and reproduction of the variety

(a)

(i) population ..... [ ]

(ii) hybrid ..... [ ]

(iii) parent line ..... [ ]

(iv) synthetic variety ..... [ ]

(v) other (please specify) ..... [ ]

(b) Other information on genetic origin and breeding method

4.4 Geographical origin of the variety: the region and the country in which the variety was bred or discovered and developed

4.5 Shall the information on data relating to components of hybrid varieties including data related to their cultivation be treated as confidential?

[ ] YES [ ] NO

If yes, please give this information on the attached form for confidential information.

If no, please give information on data relating to components of hybrid varieties including data related to their cultivation:

Breeding scheme (indicate female component first)

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in the CPVO Protocol; please mark the state of expression which best corresponds).

Characteristics		Example varieties	Note
5.1 (6)	**Leaf: length**		
	short	Carla, Conrad	3 [ ]
	medium	Elsa, Flash, Marriott	5 [ ]
	long	Turbo	7 [ ]
	very long	Vilmorin N°5	9 [ ]
5.2 (9)	**Leaf: colour**		
	only green	Zoom	1 [ ]
	only red	Carla	2 [ ]
	green and red	Rubina	3 [ ]
5.3 (10)	**Leaf: intensity of green colour**		
	light	Jaz	3 [ ]
	medium	Bea, Toner	5 [ ]
	dark	Conrad, Magic, Zoom	7 [ ]
5.4 (22)	**Time of flowering**		
	very early		1 [ ]
	early		3 [ ]
	medium		5 [ ]
	late		7 [ ]
	very late		9 [ ]
5.5 (28)	**Male sterility**		
	absent		1 [ ]
	present		9 [ ]

Characteristics		Example varieties	Note
5.6 (29)	**Head: length**		
	very short	Carla	1 [ ]
	short	Mona	3 [ ]
	medium	Bea, Monitor	5 [ ]
	long	Faro, Focus, Revor	7 [ ]
	very long	Normale	9 [ ]
5.7 (32)	**Head: shape in longitudinal section**		
	narrow elliptic		1 [ ]
	elliptic	Dirv, Rinof	2 [ ]
	broad elliptic		3 [ ]
	ovate	Histerra, Zoom	4 [ ]

6. Similar varieties and differences from these varieties:

Denomination of similar variety	Characteristic in which the similar variety is different[1)]	State of expression of similar variety	State of expression of candidate variety

[1)] In the case of identical states of expressions of both varieties, please indicate the size of the difference

7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

7.2.1 Period of forcing (please state month)

7.2.2 Other conditions

[ ] YES, please specify

[ ] NO

7.3 Other information

[ ] YES, please specify

[ ] NO

8. GMO-information required

The variety represents a Genetically Modified Organism within the meaning of Article 2(2) of Council Directive EC/2001/18 of 12/03/2001.

[ ] YES [ ] NO

If yes, please add a copy of the written attestation of the responsible authorities stating that a technical examination of the variety under Articles 55 and 56 of the Basic Regulation does not pose risks to the environment according to the norms of the above-mentioned Directive.

9. Information on plant material to be examined

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 or pesticide)	[ ] Yes	[ ] No
(c) Tissue culture	[ ] Yes	[ ] No
(d) Other factors	[ ] Yes	[ ] No

Please provide details of where you have indicated "Yes":

I/we hereby declare that to the best of my/our knowledge the information given in this form is complete and correct.

Date Signature Name

[End of document]