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INTERNATIONAL UNION
FOR THE PROTECTION
OF NEW VARIETIES OF
PLANTS

UNION INTERNATIONALE
POUR LA PROTECTION
DES OBTENTIONS
VÉGÉTALES

INTERNATIONALER
VERBAND ZUM SCHUTZ
VON PFLANZEN-
ZÜCHTUNGEN

UNIÓN INTERNACIONAL
PARA LA PROTECCIÓN
DE LAS OBTENCIONES
VEGETALES

DRAFT

GUIDELINES
FOR THE CONDUCT OF TESTS
FOR DISTINCTNESS, UNIFORMITY AND STABILITY

GLOBE ARTICHOKE
(Cynara scolymus L.)
(Cynara cardunculus var scolymus L.)

These Guidelines should be read in conjunction with document TG/1/2, which contains explanatory notes on the general principles on which the Guidelines have been established.

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
I. Subject of these Guidelines	3
II. Material Required	3
III. Conduct of Tests	3
IV. Methods and Observations.....	4
V. Grouping of Varieties	4
VI. Characteristics and Symbols	4
VII. Table of Characteristics	6
VIII. Explanations on the Table of Characteristics	18
IX. Literature	23
X. Technical Questionnaire	24

I. Subject of these Guidelines

These Test Guidelines apply to all varieties of *Cynara scolymus* L. (*Cynara cardunculus* var. *scolymus* L.), of the family of the *Compositae*.

II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the seed or the young plant material required for testing the variety is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must make sure that all customs formalities are complied with. The minimum quantity of seed or plant material to be supplied by the applicant in one or several samples should be:

- (b) vegetatively propagated varieties: 60 plants
- (a) seed propagated varieties: 50 g of seed

The plant material supplied should be visibly healthy, not lacking in vigour or affected by any important pest or disease and virus free. The seed should at least meet the minimum requirements for germination capacity, moisture content and purity for marketing seed in the country in which the application is made. The germination capacity should be as high as possible.

2. The plant material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of Tests

1. The minimum duration of tests should normally be two independent growing cycles.
2. The tests should normally be conducted at one place. If any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.
3. The tests should be carried out under conditions ensuring normal growth. The size of the plots should be such that plants or parts of plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the growing period. Each test should include a total of 40 plants which should be divided between two or more replicates. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.
4. Additional tests for special purposes may be established.

IV. Methods and Observations

1. Unless otherwise indicated, all observations determined by measurement, weighting or counting should be made on 10 plants or parts taken from each of 10 plants.
2. For the assessment of uniformity, a population standard of 5% with an acceptance probability of at least 95% should be applied. In case of a sample size off 40 plants the maximum number of off-types allowed would be 4 (the number includes plants resulting from the selfing of a parent line)
3. Unless otherwise indicated, all observations on the leaves should be made on fully developed leaves, on the 3rd or 4th leaf from the base (i.e. when the flower head is about 3 cm in diameter).
4. Unless otherwise indicated all observations on the outer bract of the flower head should be made on the 5th whorl of bracts from the base of the central flower head.
5. Unless otherwise indicated, all observations on inner bracts of flower head must be made on the central flower head.

V. Grouping of Varieties

1. The collection of varieties to be grown should 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. Their various states of expression should be fairly evenly distributed throughout the collection.
2. It is recommended that the competent authorities use the following characteristics for grouping varieties:
 - (a) Leaf: lobing (10 to 12 leaves stage) (characteristic 9)
 - (b) Central flower head: shape in longitudinal section (characteristic 26)
 - (c) Central flower head: time of appearance (characteristic 28)
 - (d) Outer bract: color (external side) (characteristic 41)

VI. Characteristics and Symbols

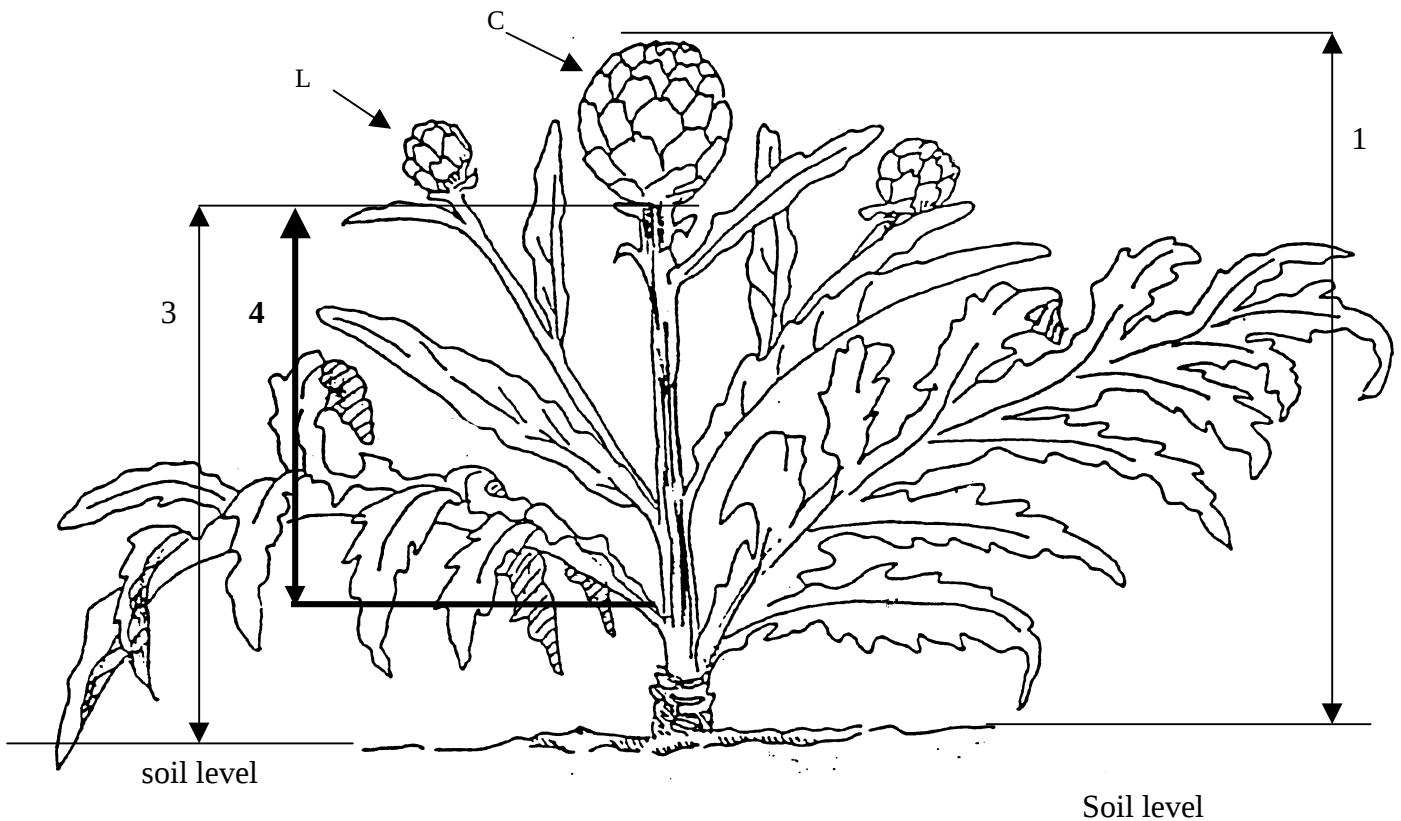
1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.
2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of the different characteristics.

3. Legend:

- (*) Characteristics that should be used on all varieties in every growing period over which the examinations are made and always be included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.
- (+) See Explanations on the Table of Characteristics in Chapter VIII.

VIII. Explanation on the Table of Characteristics

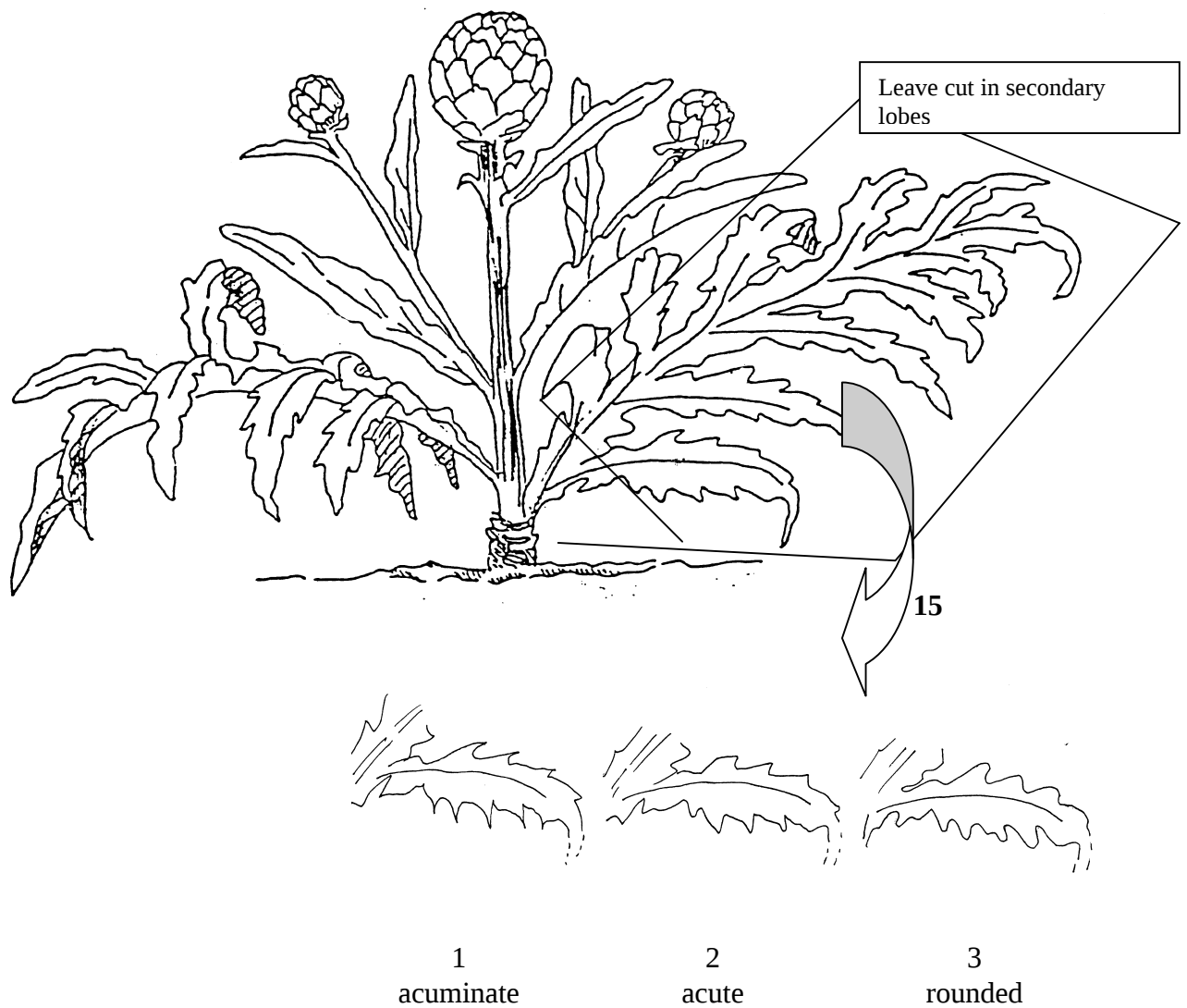
Ad. 1, 3, 4 : Plant : height (including central flower head) (1); Main stem : height (excluding central flower head) (3) ;
Main stem : distance between flower head and last developed leaf (4)



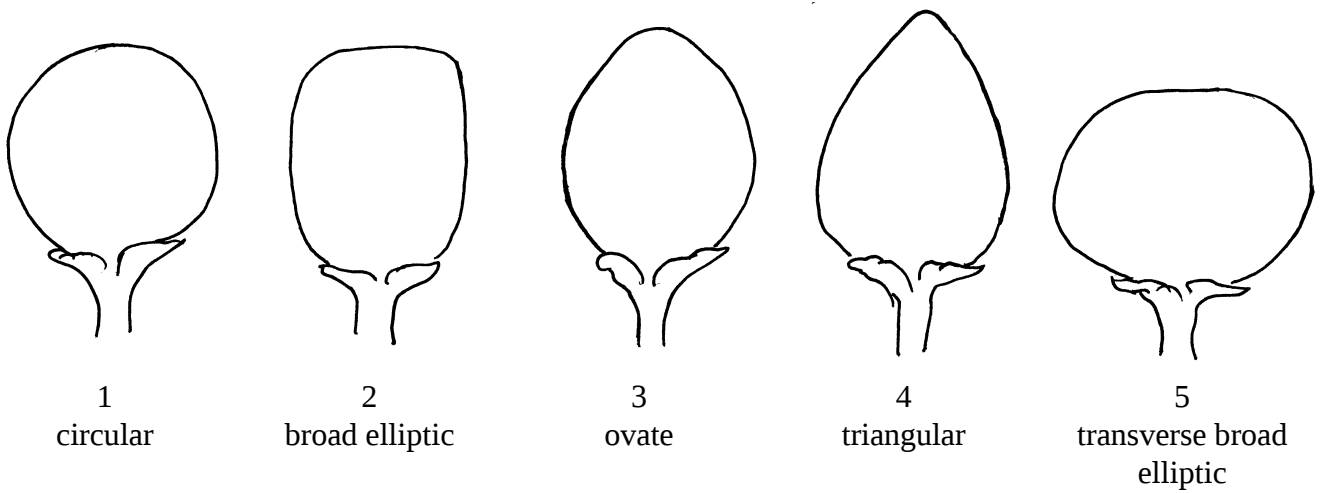
C: Central flower head

L: First flower head on lateral

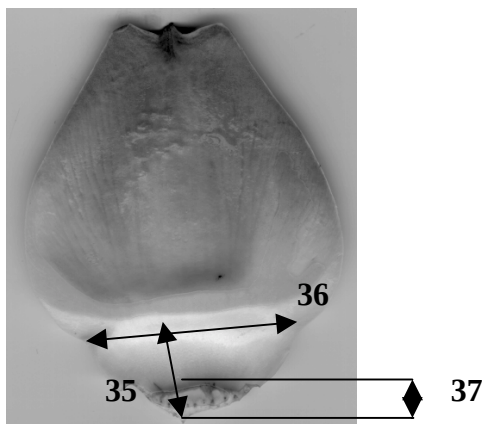
Ad. 15: Lobe: shape of tip of secondary lobes (on the 3rd – 4th whorl of leaves)



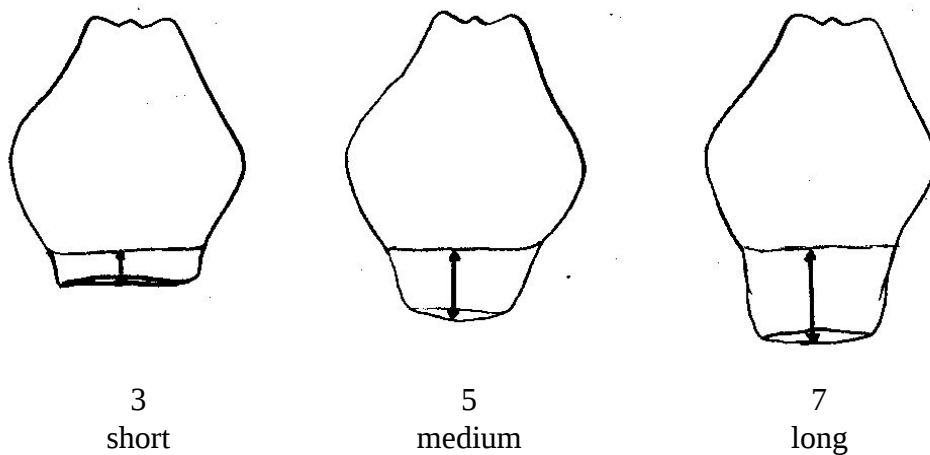
Ad. 26, 33: Central flower head (26) and First flower head on lateral shoot (33): shape in longitudinal section



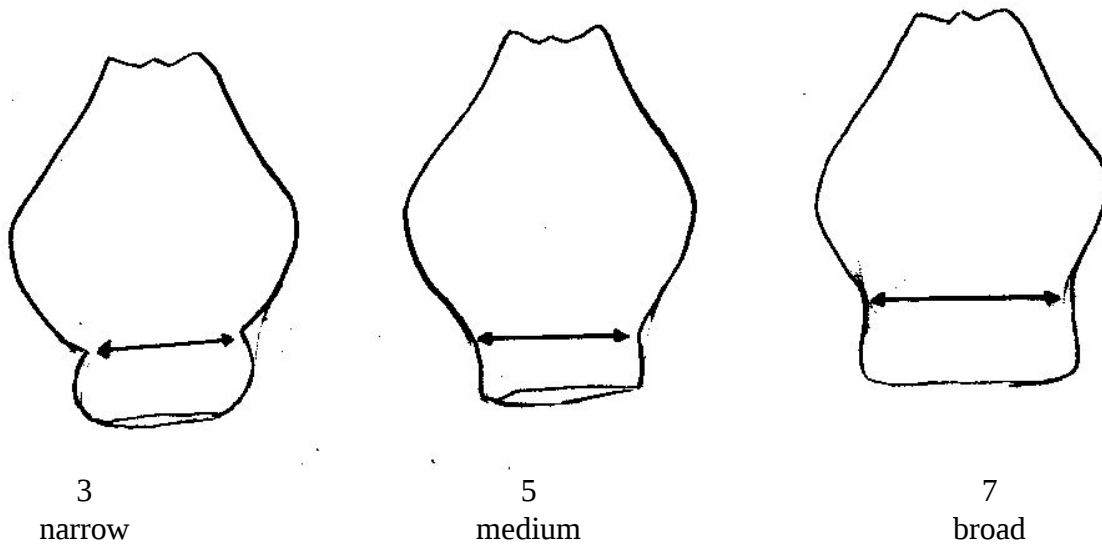
Ad. 35, 36, 37: Outer bracts: length of base (35), width of base (36), thickness at base (37)



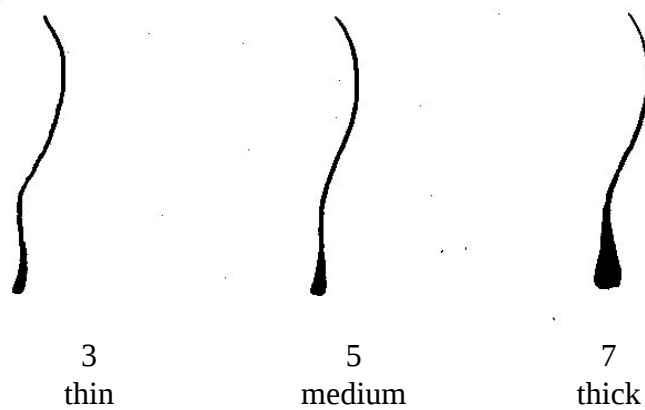
Ad. 35: Outer bract : length of base



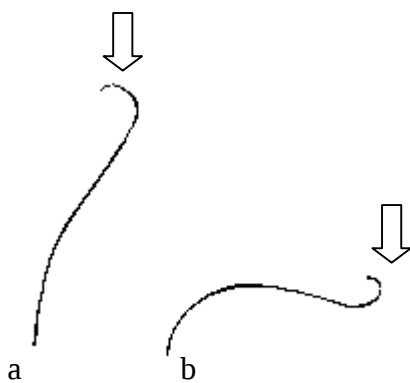
Ad. 36: Outer bract : width of base



Ad. 37: Outer bract : thickness at base (*bract in profile*)

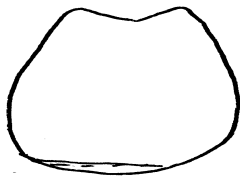


Ad. 43: Outer bract: reflexing at tip

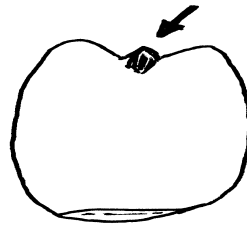


- a: reflexing at tip (on Chrysanthème)
- b: reflexing at tip (on Calice)

Ad. 45: Outer bract: mucron

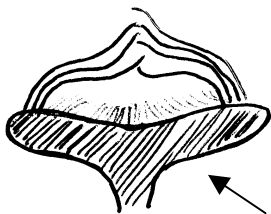


1
absent

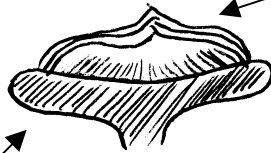


9
present

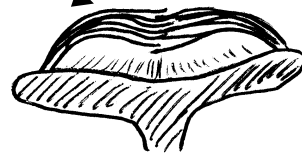
Ad. 47: Central flower head: density of inner bracts



3
sparse



5
medium



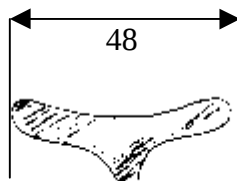
7
dense

inner bracts
receptacle

Ad. 48, 49, 50: Receptacle: diameter (48), thickness (49), shape in longitudinal section (50)



3
flat



5
slightly depressed



7
strongly depressed

IX. Literature

Basnizky J. and Zohary D. 1994: Breeding of seed-Planted Artichoke. Plant Breeding Reviews 12: 253-267

Foury C. 1967, Etude de la biologie florale de l'artichaut (*Cynara scolymus* L.); Application à la sélection. 1^{ère} partie: données sur la biologie florale, Ann. Amélior. Plantes 17 (4): 357-373

Foury C. 1969, Etude de la biologie florale de l'artichaut (*Cynara scolymus* L.); Application à la sélection. 2^{ème} partie: étude des descendance obtenues en fécondation contrôlée, Ann. Amélior. Plantes 19 (1): 23-52

Foury C. et Aubert S. 1977, Observations préliminaires sur la présence et la répartition de pigments anthocyaniques dans un mutant d'artichaut (*Cynara scolymus* L.) à fleurs blanches, Ann. Amélior. Plantes 27 (5): 603-612

Foury C. 1978, Quelques aspects de l'histoire des variétés d'artichaut (*Cynara scolymus* L.), Journal d'agric. traditionnelle et de botanique appliquée, XXV (1) janvier-mars 1978.

Foury C. 1979, Quelques aspects pratiques de la sélection généalogique de l'artichaut, 1-Présentation, création de lignées, Ann. Amélior. Plantes 29 (4): 383-418

Foury C. 1989, Ressources génétiques et diversification de l'artichaut (*Cynara scolymus* L.), Acta Horticulturae 242: 155-166

Pécaut P. and Martin F. 1993, Variation occurring after natural and in vitro multiplication of early Mediterranean cultivars of globe artichoke *Cynara scolymus* L.. Agronomie 13: 909-919

Zohary D. and Basnizky J. 1975, The cultivated artichoke – *Cynara scolymus* L. Its probable wild Ancestors. Economic Botany 29: 233-235

X. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights	
1. Species	<i>Cynara scolymus</i> L. / <i>Cynara cardunculus var scolymus</i> L. ARTICHOKE
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	
4. Information on origin, maintenance and reproduction of the variety	
4.1 Method of maintenance and reproduction	
(a) Vegetative propagation	[]
(b) Seed propagation	[]
- Hybrid.....	[]
- Open pollinated	[]
(c) Other (specify)	[]
4.2 Other information	

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

	Characteristics	Example Varieties	Note
5.1	Leaf: lobing (10 to 12 leaf stage)		
(9)			
	absent	Tudela, Violet de Provence	1[]
	present	Camus de Bretagne, Vertu	9[]
5.2	Central flower head: shape in longitudinal section		
(26)			
	circular	Castel, Green Globe	1[]
	broad elliptic	Chrysanthème, Vert de Provence	2[]
	ovate	Cric, Salambo	3[]
	triangular	Tudela, Violet de Provence	4[]
	broad transverse elliptic	Carène, Pètre	5[]
5.3	Central flower head: shape of tip		2[]
(27)			
	acute	Violet de Provence	1[]
	rounded	Camus de Bretagne	2[]
	flat	Chrysanthème	3[]
	depressed	Carène, Pètre	4[]
5.4	Central flower head: time of appearance		
(28)			
	early	Chrysanthème, Tudela	3[]
	medium	Blanc Hyérois	5[]
	late	Camus de Bretagne	7[]

Characteristics		Example Varieties	Note
5.5	Outer bract: color (external side)		
(41)			
	green	Blanc hyérois, Vert de Provence, Tudela	1[]
	green striped with violet	Violet de Provence	2[]
	violet striped with green	Chrysanthème	3[]
	mainly violet	Cric, Salambo	4[]
	entirely violet	Velours	5[]
6. Similar varieties and differences between these varieties			
Denomination of similar variety	Characteristic in which the similar variety is different ^{o)}	State of expression of similar variety	State of expression of candidate variety
^{o)} 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 Main use

(a) Fresh market

- large flower head []
- small flower head []

(b) Canning

- receptacle []
- bottom []
- pickling artichoke []

(c) Industrial use

- leaf extraction []
- biomass []

(d) Other (please specify) []

.....

7.2 Resistance to pests and diseases

7.3 Special conditions for the examination of the variety

7.4 Other information

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 that question is yes, please attach a copy of such an authorization.

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