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

GENEVA

DRAFT

## CAULIFLOWER \*

UPOV CODE: BRASS\_OLE\_GBE

*Brassica oleracea* L.  
*convar botrytis* (L.) Alef.  
*var. botrytis* L.

## GUIDELINES

## FOR THE CONDUCT OF TESTS

## FOR DISTINCTNESS, UNIFORMITY AND STABILITY

*prepared by experts from France*

*to be considered by the Technical Working Party for Vegetables (TWV)  
 at its fortieth session to be held in Guanajuato, Guanajuato State, Mexico,  
 from June 12 to 16, 2006*

## Alternative Names: \*

Latin	English	French	German	Spanish
<i>Brassica oleracea</i> L. <i>convar botrytis</i> (L.) Alef. <i>var. botrytis</i>	Cauliflower	Chou fleur	Blumenkohl	Cavolfiore

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.

\* 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 *Brassica oleracea* L. *convar. botrytis* (L.) Alef. *var. botrytis*. L.

## 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:

*25 g [FR propose 10 000 seeds or 20 g]*

2.4 The seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority.

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

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

## 3. Method of Examination

### 3.1 *Duration of Tests*

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

### 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.

#### 3.3.1 Type of observation

The recommended method of observing the characteristic is indicated by the following key in the second column of the Table 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

### 3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 60 plants, which should be divided between two or more 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 *Number of Plants / Parts of Plants to be Examined*

Unless otherwise indicated, all observations on single plants should be made on 40 plants or parts taken from each of 40 plants and any other observations made on all plants in the test. *[FR propose to reduce to 20 plants.]*

### 3.6 *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.

#### 4.2 *Uniformity*

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:

##### 4.2.1 Cross-pollinated varieties

The assessment of uniformity for cross-pollinated varieties should be according to the recommendations for cross-pollinated varieties in the General Introduction.

##### 4.2.2 Single cross hybrids and inbred lines

For the assessment of uniformity of single cross hybrids and inbred lines, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 60 plants, 2 off-types are allowed, *[(excluding inbred plants).]*

##### 4.2.3 Other Hybrids

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. In the case of single cross hybrids, the uniformity standards are set out in Section 4.2.2.

#### 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 tested, either by growing a further generation, or by testing a new seed stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

4.3.3 Where appropriate, or in cases of doubt, the stability of a hybrid variety may, in addition to an examination of the hybrid variety itself, also be assessed by examination of the uniformity and stability of its parent lines

### 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 is 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) Seedling: anthocyanin coloration of hypocotil (characteristic 1)
- (b) Curd: color (characteristic 23)
- (c) Flower: color (characteristic 27)

*[FR propose to add Earliness in specific growing season, (characteristic 28), specific growing season, (new characteristic) and Male sterility, (new characteristic).]*

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

## 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*

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.

### 6.3 *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*

(\*) Asterisk characteristic – see Section 6.1.2

QL Qualitative characteristic – see Section 6.3

QN Quantitative characteristic – see Section 6.3

PQ Pseudo-qualitative characteristic – see Section 6.3

MG Single measurement of a group of plants or parts of plants – see Section 3.3.1

MS Measurement of a number of individual plants or parts of plants – see Section 3.3.1

VG Visual assessment by a single observation of a group of plants or parts of plants – see Section 3.3.1

VS Visual assessment by observation of individual plants or parts of plants – see Section 3.3.1

(a) – (b) See Explanations on the Table of Characteristics in Chapter 8, Section 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8, Section 8.2

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

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
<b>1. VG</b>	<b>Seedling: anthocyanin coloration of hypocotyl</b>	<b>Plantule: pigmentation anthocyanique de l'hypocotyle</b>	<b>Keimpflanze: Anthocyan- färbung des Hypokotyls</b>			
<b>QL</b>	absent	absente	fehlend		Brio, Calypso	1
	present	présente	vorhanden		Delira, Dominant	9
<b>2. MG</b>	<b>Plant: height (at time of harvest)</b>	<b>Plante: hauteur (à la récolte)</b>	<b>Pflanze: Höhe (bei Erntereife)</b>			
<b>QN (a)</b>	very short	très basse	sehr niedrig		Kopod	1
	short	basse	niedrig		Opaal	3
	medium	moyenne	mittel		Fastman, Labrador	5
	tall	haute	hoch		Delira, Exponent	7
	very tall	très haute	sehr hoch		Paradiso	9
<b>3. MG</b>	<b>Outer stem: length(up to insertion of first leaf)</b>	<b>Pied: longueur(jusqu'à l'insertion de la première feuille)</b>	<b>Aussenstrunk: Länge(bis zum Ansatz des ersten Blattes)</b>			
<b>QN (a)</b>	short	court	kurz		Dagan, Opaal	3
	medium	moyen	mittel		Fanch, St. Gwithian	5
	long	long	lang		Paradiso	7
<b>4. VG</b>	<b>Leaf: attitude</b>	<b>Feuille: port</b>	<b>Blatt: Haltung</b>			
<b>(*) (+)</b>						
<b>QN</b>	erect	dressé	aufrecht		Paradiso	1
	semi-erect	demi-dressé	halbaufrecht		Erfurter Zwerg, Fastman	3
	horizontal	horizontal	waagrecht		Opaal	5



English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>5. MG Leaf: length</b>	<b>Feuille: longueur</b>	<b>Blatt: Länge</b>			
<b>QN (a)</b> very short	très courte	sehr kurz			1
short	courte	kurz		Opaal	3
medium	moyenne	mittel		Fortuna	5
long	longue	lang		Géant de Naples tardif, Snow March	7
very long	très longue	sehr lang		Paradiso	9
<b>6. MG Leaf: width</b>	<b>Feuille: largeur</b>	<b>Blatt: Breite</b>			
<b>QN (a)</b> very narrow	très étroite	sehr schmal		Alverda, Géant de Naples tardif	1
narrow	étroite	schmal		Andes	3
medium	moyenne	mittel		Alpha 2	5
broad	large	breit		Senator	7
very broad	très large	sehr breit		Ostrea	9
<b>7. VG Leaf: shape (* )</b>	<b>Feuille: forme</b>	<b>Blatt: Form</b>			
<b>PQ (a)</b> narrow elliptic	elliptique étroite	schmal		Géant de Naples tardif	3
elliptic	elliptique	elliptisch		Alpha 2	5
broad elliptic	elliptique large	breit elliptisch		Danish Giant	7
<b>8. VG Leaf: lobing</b>	<b>Feuille : découpeure du bord</b>	<b>Blatt: Lappung</b>			
<b>QN (a)</b> absent	absente	fehlend		Opaal	1
present	présente	vorhanden		Minaret, Ottobrino, Romanesco	9
<b>9. VG Leaf: color (with wax if present)</b>	<b>Feuille : couleur (avec la pruine éventuellement)</b>	<b>Blatt : Farbe (mit wachs, sofern vorhanden)</b>			
<b>QL (a)</b> green	vert	grün		Alpha 2	1
grey green	vert gris	graugrün		Géant de Naples tardif, Heros	2
blue green	vert bleu	blaugrün		Bambi, Barrier Reef, Starlight	3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>10. VG (*)</b>	<b>Leaf: intensity of color (as for 9)</b>	<b>Feuille : intensité de la couleur (comme pour 9)</b>	<b>Blatt : Intensität der Farbe (wie unter 9)</b>			
<b>QN (a)</b>	light	claire	hell		Deense Export	3
	medium	moyenne	mittel		Alpha 2, Heros	5
	dark	foncée	dunkel		Delira, Lecerf	7
<b>11. (+)</b>	<b>Leaf: cross section of midrib at lower third</b>	<b>Feuille : section transversale de la nervure médiane au tiers inférieur</b>	<b>Blatt : Querschnitt der Mittelrippe im unteren Drittel</b>			
	strongly flattened	fortement aplatie	stark abgeflacht		Erfurter	1
	weakened flattened	weakly flattened	leicht abgeflacht		Siria	2
	rounded	rounded	rund		Vega	3
<i>FR propose to delete</i>						
<b>12. VG</b>	<b>Leaf: torsion of tip</b>	<b>Feuille: torsion du sommet</b>	<b>Blatt : Drehung der Spitze</b>			
<b>QN (a)</b>	absent or very weak	absente ou très faible	fehlend oder sehr gering		Alverda	1
	weak	faible	gering		Belot, Di Jesi	3
	medium	moyenne	mittel		Oberon	5
	strong	forte	stark		Arcade	7
	very strong	très forte	sehr stark			9
<b>13. VG</b>	<b>Leaf: shape in cross-section</b>	<b>Feuille: forme en section transversale</b>	<b>Blatt: Form im Querschnitt</b>			
<b>QN (a)</b>	concave	concave	konkav		Géant de Naples tardif	1
	flat	driute	eben		Alpha 2	2
	convex	convexe	konvex		Fanch	3

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>14. VG</b>	<b>Leaf: blistering</b>	<b>Feuille: cloquête</b>	<b>Blatt: Blasigkeit</b>			
<b>QN (a)</b>	absent or very weak	nulle ou très faible	fehlend oder sehr gering		Lecerf	1
	weak	faible	gering		Alpha 2, Opaal, White Fox	3
	medium	moyenne	mittel		Celesta, Montano	5
	strong	forte	stark		Sernio	7
	very strong	très forte	sehr stark			9
<b>15. VG</b>	<b>Leaf: distribution of blisters</b>	<b>Feuille: distribution des cloques</b>	<b>Blatt: Verteilung der Blasen</b>			
<b>QL (a)</b>	at tip only	seulement au sommet	nur an der Spitze		White Fox, White Rock	1
	on whole leaf	sur toute la feuille	auf dem gesamten Blatt		Campoverde, Exponent	2
<b>16. VG</b>	<b>Leaf: crimping near main vein</b>	<b>Feuille: plissement à proximité de la nervure principale</b>	<b>Blatt : Faltung in der Nähe der Hauptader</b>			
<b>QN (a)</b>	absent or very weak	nul ou très faible	fehlend oder sehr gering		Lena, Malvina	1
	weak	faible	gering		Balmoral, Flanca	3
	medium	moyen	mittel		Deniela	5
	strong	fort	stark		Sernio	7
	very strong	très fort	sehr stark			9
<b>17. VG</b>	<b>Leaf: undulation of margin</b>	<b>Feuille: ondulation du bord</b>	<b>Blatt: Wellung des Randes</b>			
<b>QN (a)</b>	absent or very weak	absente ou très faible	fehlend oder sehr gering		Géant de Naples	1
	weak	faible	gering		Alpha 2	3
	medium	moyenne	mittel		Alice Springs	5
	strong	forte	stark		Delira, Purdy	7
	very strong	très forte	sehr stark			9

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>18. VG (*)</b>	<b>Curd: covering by inner leaves</b>	<b>Pomme: couverture par les feuilles internes</b>	<b>Blume: Deckung durch innere Blätter</b>			
<b>PQ (b)</b>	not covered	pas couverte	nicht gedeckt		Calypso, Opaal	1
	partly covered	partiellement teilweise	teilweise gedeckt		Celesta, Fortuna	2
	covered	couverte	gedeckt		Ims, Orco	3
<b>19. MS (*)</b>	<b>Curd: height</b>	<b>Pomme: hauteur</b>	<b>Blume: Höhe</b>			
<b>QN (b)</b>	short	basse	niedrig		Lecerf, Mechelse 2	3
	medium	moyenne	mittel		Alpha 2, Delira	5
	tall	haute	hoch		Ims, Orco	7
<b>20. MS (*)</b>	<b>Curd: diameter</b>	<b>Pomme: diamètre</b>	<b>Blume: Durchmesser</b>			
<b>QN (b)</b>	small	petit	klein		Alverda	3
	medium	moyen	mittel		Barrier Reef	5
	large	grand	gross			7
<b>21. VG (*) (+)</b>	<b>Curd: shape in longitudinal section</b>	<b>Pomme: forme en section longitudinale</b>	<b>Blume: Form im Längsschnitt</b>			
<b>PQ (b)</b>	circular	circulaire	rund		Easter Crown	1
	broad transverse elliptic	elliptique transverse large	breit quer elliptisch		Orco	2
	transverse elliptic	elliptique transverse	quer elliptisch		Celesta	3
	narrow transverse elliptic	elliptique transverse étroite	schmal quer elliptisch		Erfurter, Lecerf	4
	triangular	triangulaire	dreieckig		Minaret, Ottobriano, Romanesco	5

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>22.</b> (*) (+)	<b><u>Varieties with triangular curds excluded: Curd: doming</u></b>	<b><u>Variétés à pomme triangulaire exclues : Pomme: courbure du sommet</u></b>	<b><u>Sorten mit dreieckiger Blume ausgenommen: Blume: Wölbung</u></b>			
	weak	faible	gering		Lecerf	3
	medium	moyenne	mittel		Géant de Naples tardif	5
	strong	forte	stark		White Rock	7
<b>23.</b> (*)	<b>VG Curd: color</b>	<b>Pomme: couleur</b>	<b>Blume: Farbe</b>			
<b>QL (b)</b>	whitish	blanchâtre	weisslich		Delira, Easter Crown	1
	yellow	jaune	gelb		Di Jesi	2
	orange	orange	orange		Orange Bouquet, Sunset	3
	green	verte	grün		Alverda, Minaret	4
	<i>FR propose to add</i>					
	violet	violette	violett		Graffiti	5
<b>24.</b> (+)	<b>VG Curd: knobbling</b>	<b>Pomme: relief</b>	<b>Blume: Höckerbildung</b>			
<b>QN (b)</b>	very fine	très fin	sehr fein			1
	fine	fin	fein		Opaal	3
	medium	moyen	mittel		Corvilia	5
	coarse	grossier	grob		Delira, Lukra	7
	very coarse	très grossier	sehr grob		Minaret	9
<b>25.</b> (+)	<b>VG Curd: texture</b>	<b>Pomme: granulation</b>	<b>Blume: Körnung</b>			
<b>QN (b)</b>	fine	fine	fein		Dominant, Erfurter	3
	medium	moyenne	mittel		Alpha 2	5
	coarse	grossière	grob		Géant de Naples tardif	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>26. VG</b>	<b>Curd: anthocyanin coloration after harvest maturity</b>	<b>Pomme: pigmentation anthocyanique après maturité de récolte</b>	<b>Blume: Anthocyanfärbung nach der Erntereife</b>			
<b>QL</b>	absent	absente	fehlend		Calypso, White Stone	1
	present	présente	vorhanden		Delira, Lukra	9
<b>27. VG (*)</b>	<b>Flower: color</b>	<b>Fleur: couleur</b>	<b>Blüte: Farbe</b>			
<b>QL</b>	white	blanche	weiss		Delira, Lukra	1
	yellow	jaune	gelb		Alpha 2, Flora Blanca, Lecerf	2
<b>28. MS (+)</b>	<b>Earliness in specific growing season (50% at harvest maturity)</b>	<b>Précocité dans le cycle de culture spécifique(50% à maturité de récolte)</b>	<b>Frühzeitigkeit in der speziellen Wachstumsperiode (50% erntereif)</b>			
<b>QN</b>	very early	très précoce	sehr früh			1
	early	précoce	früh			3
	medium	moyenne	mittel			5
	late	tardive	spät			7
	very late	très tardive	sehr spät			9
<i>FR propose to add two new characteristics :</i>						
<b>29. VG (*)</b>	<b>Male sterility</b>					
<b>QL</b>	absent	absent			Alpha 2, Flora Blanca	1
	partial	partielle				2
	total	totale			Aviron, Bodilis	3

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English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
<b>30. VG Growing season</b>					
(*)					
(+)					
<b>QL</b>	spring				1
	summer				2
	autumn				3
	winter				4
	over winter type				5

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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:

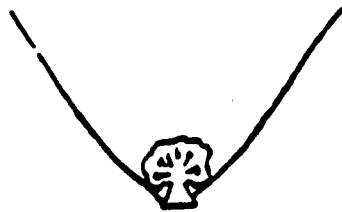
- (a) Foliage and leaf: All observations on the foliage and the leaf should be made at the time of full development of the foliage, before curd formation.
- (b) Curd: All observations on the curd should be made when the curd is fully developed, (at commercial stage).

8.2 *Explanations for individual characteristics*

Ad. 4: Leaf: Attitude



1  
erect



3  
semi-erect

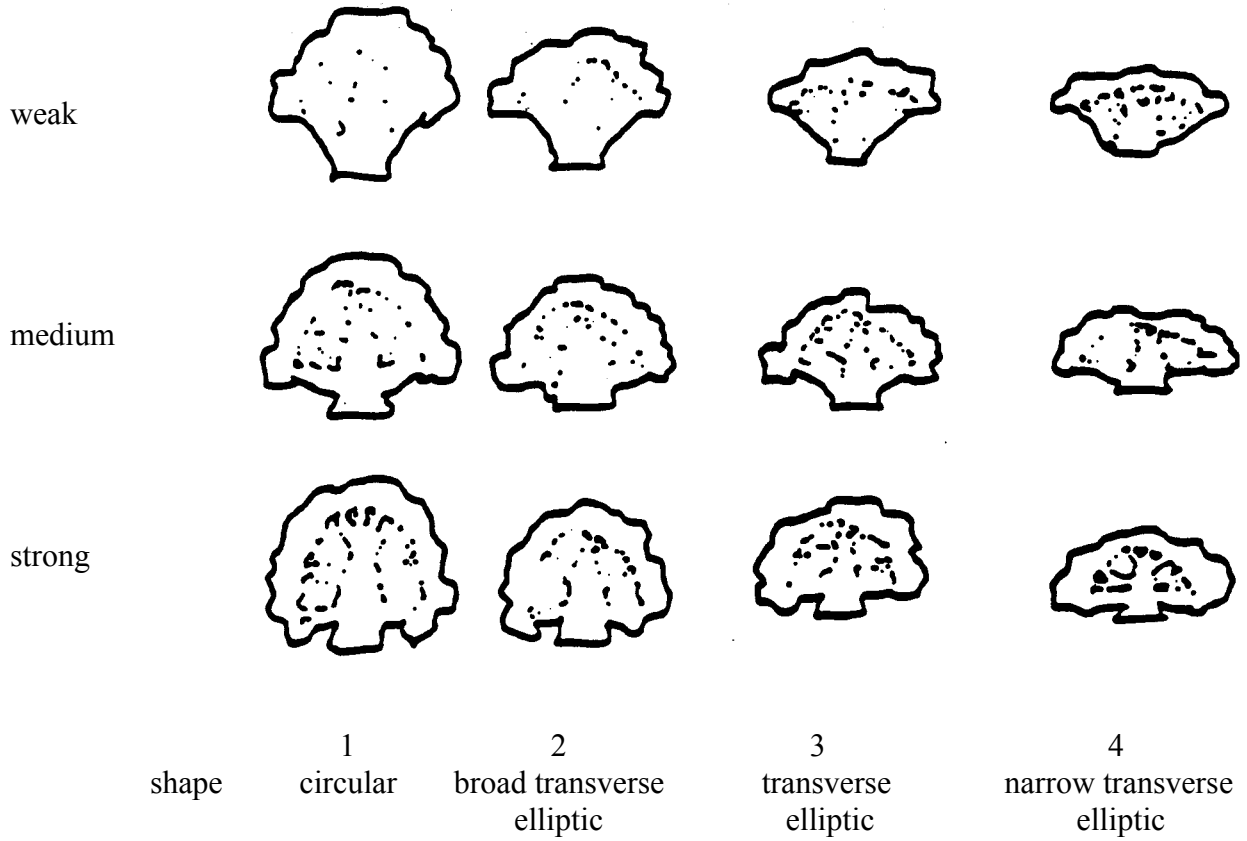


5  
horizontal

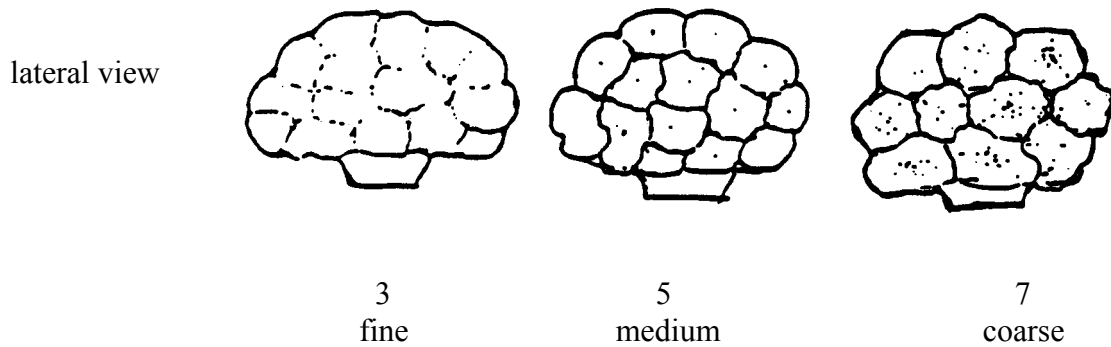


Ad. 21: Curd: shape in longitudinal section (21) and doming (22)

doming



Ad. 24: Curd: knobbling



Ad. 28: Earliness in specific growing season (50% at maturity)

In cauliflower earliness is strongly influenced by the temperature and the season of growing. Nevertheless at one and the same place and for the same growing season earliness is an important characteristic for the distinction of varieties. For these reasons the variety description should always state the place and the season of growing.

**Characteristic 28 : Earliness in specific growing season ( 50% at harvest maturity)**

	spring	summer	autumn	winter	over winter type
<b>very early</b>	Barlow Viviane	Barkha Fastman	Snow Crown Segalen	Belot Nedeleg	Vogue Kernis
<b>early</b>	Baldo Sevilla	Eagle Linero	Aviso Bruce	Triumphant Deniol	Nomad Atao
<b>medium</b>	Calido Decora	Tetris Planita	Devina Tertes	Jeff Fanch	Charif Bruggen
<b>late</b>	Montano	Subito Candid Charm	Nominoe Tucson	Ourasis Ciren	Dossen Agadir
<b>very late</b>		Fremont	Amistad Neven	Diamen Merwen	Valetta Antrim

## 9. Literature

- FUJIME, Yukihiro, 1983: Studies on Thermal Conditions of Curd Formation and Development in Cauliflower and Broccoli, with Special Reference to Abnormal Curd Development, Memoires of Faculty of Agriculture, Kagawa University, No. 40, February 1983, pp. 1-123, JP
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- TSUNODA, S., HINATA, K., and GOMEZ-CAMPO, C., 1980: Brassica Crops and Wild Allies, Biology and Breeding, Japan Scientific Societies Press, Tokyo, JP
- GRAY, A.R., 1989: Taxonomy and Evolution of Broccoli and Cauliflower, *Baileya* 23 (1), pp. 28-46
- SADIK, S., 1962: Morphology of the curd of cauliflower, *Amer. Bot.* 49, pp. 290-297
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- WIEBE, H.J., 1975: The Morphological development of cauliflower and broccoli cultivars depending on temperature, *Sci. Hort.* 3, pp. 95-101
- WIEBE, H.J., 1981: Influence of transplant characteristics and growing conditions on curd size (buttoning) of cauliflower, *Acta Hort.* 122, pp. 99-105

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)
<p>TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p> <p>In the case of hybrid varieties which are the subject of an application for plant breeders' rights, and where the parent lines are to be submitted as a part of the examination of the hybrid variety, this Technical Questionnaire should be completed for each of the parent lines, in addition to being completed for the hybrid variety.</p>		
1. Subject of the Technical Questionnaire		
1.1 Latin Name	<input type="text" value="Brassica oleracea L. convar. botrytis (L.) Alef. var botrytis L."/>	
1.2 Common Name	<input type="text" value="Cauliflower"/>	
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

- (a) controlled cross  [ ]  
(please state parent varieties)
- (b) partially known cross  [ ]  
(please state known parent variety(ies))
- (c) unknown cross  [ ]

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)

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

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

4.2.2 Other  [ ]  
(please provide details)

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 Seedling: anthocyanin coloration of hypocotyl</b> <b>(1)</b>		
absent	Brio, Calypso,	1[ ]
present	Delira, Dominant	9[ ]
<b>5.2 Leaf: intensity of color</b> <b>(10)</b> <i>FR propose to add.</i>		
light	Deense, Export	3[ ]
medium	Alpha 2, Heros	5[ ]
dark	Delira, Lecerf	7[ ]
<b>5.3 Curd: color</b> <b>(23)</b>		
whitish	Delira, Easter crown	1[ ]
yellow	Di Jesi	2[ ]
orange	Orange Bouquet, Sunset	3[ ]
verte	Alverda, Minaret	4[ ]
violet	Graffiti	5[ ]
<b>5.4 Flower: color</b> <b>(27)</b>		
white	Delira, Lukra	1[ ]
yellow	Alpha 2, Flora blanca, Lecerf	2[ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
<b>5.5</b>		
<b>(28)</b>		
<b>Earliness in specific growing season</b>		
<i>FR propose to add.</i>		
Very early		1[ ]
early		3[ ]
medium		5[ ]
late		7[ ]
very late		9[ ]
<b>5.6</b>		
<b>(29)</b>		
<b>Male sterility</b>		
<i>FR propose to add.</i>		
absent	Alpha 2, Flora blanca	1[ ]
intermediate		2[ ]
present	Aviron, Bodilis	3[ ]
<b>5.7</b>		
<b>(30)</b>		
<b>Specific growing season:</b>		
<i>FR propose to add.</i>		
spring		1[ ]
summer		2[ ]
autumn		3[ ]
winter		4[ ]
over winter type		5[ ]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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6. Similar varieties and differences from these varieties

*Please use the table, and space provided for comments, below 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>Curd: color</i>	<i>yellow</i>	<i>orange</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 Special conditions for the examination of the variety

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

Yes [ ] No [ ]

7.2.2 If yes, please give details:

7.3 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 (b) is yes, please attach a copy of the authorization.

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

.....

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]