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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

[*]

CAULIFLOWER

UPOV Code: BRASS_OLE_GBB

Brassica oleracea L. convar *botrytis* (L.)Alef. var. *botryris* 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 at its forty-third session, to be held in Nairobi, Kenya, , from June 11 to 15, 2007

Alternative Names:[*]

Botanical name	*English*	*French*	*German*	*Spanish*
Brassica oleracea L. convar *botrytis* (L.) Alef. var. *botrytis*, *Brassica caulifloria* Lizg.	Cauliflower	Chou fleur	Blumenkohl	Coliflor

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), 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:

5,000 seeds or 10 g.

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

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

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

3.3.1 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.

3.3.2 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 20 plants or parts taken from each of 20 plants and any other observations made on all plants in the test.

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

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 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.

4.2.3 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. In addition, for single cross hybrids, a population standard of 3% and an acceptance probability of at least 95% should be applied for inbred plants obviously resulting from the selfing of a parent line. In the case of a sample size of 60 plants, 4 inbred plants are allowed.

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 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) Seedling: anthocyanin coloration of hypocotyl (characteristic 1)
(b) Curd: color (characteristic 21)
(c) Flower: color (characteristic 25)
(d) Earliness in spring/summer trial (50% at harvest maturity) (characteristic 26.1)
Earliness in autumn/early winter trial (50% at harvest maturity) (characteristic 26.2)
Earliness in over winter trial (50% at harvest maturity) (characteristic 26.3)

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

(*) Asterisked characteristic – see Chapter 6.1.2

QL Qualitative characteristic – see Chapter 6.3
QN Quantitative characteristic – see Chapter 6.3
PQ Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS See Chapter 3.3.2

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

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

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

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
l. (*)	**VG**	**Seedling: anthocyanin coloration of hypocotyl**	**Plantule: pigmentation anthocyanique de l'hypocotyle**	**Keimpflanze: Anthocyanfärbung des Hypokotyls**	**Plántula: pigmentación antociánica del hipocotilo**		
QL		absent	absente	fehlend	ausente	Brio	1
		present	présente	vorhanden	presente	Ciren, Dominant	9
2.	**VG/ MG**	**Plant: height (at time of harvest)**	**Plante: hauteur (à la récolte)**	**Pflanze: Höhe (bei Erntereife)**	**Planta: altura (en la época de la cosecha)**		
QN	**(a)**	very short	très basse	sehr niedrig	muy baja		1
		short	basse	niedrig	baja	Luxor, Opaal	3
		medium	moyenne	mittel	media	Fastman, Mexico	5
		tall	haute	hoch	alta	Neven, Sirente	7
		very tall	très haute	sehr hoch	muy alta	Calisa, Paradiso	9
3.	**VG/ MG**	**Outer stem: length (up to insertion of first leaf)**	**Pied: longueur (jusqu'à l'insertion de la première feuille)**	**Aussenstrunk: Länge (bis zum Ansatz des ersten Blattes)**	**Tallo exterior: longitud (hasta la inserción de la primera hoja)**		
QN	**(a)**	short	court	kurz	corta	Mexico, Opaal	3
		medium	moyen	mittel	media	Fanch, Nautilus	5
		long	long	lang	larga	Neven, Paradiso	7
4. (*) (+)	**VG**	**Leaf: attitude**	**Feuille: port**	**Blatt: Haltung**	**Hoja: porte**		
QN	**(a)**	erect	dressé	aufrecht	erecto	Igloo, Paradiso	1
		semi-erect	demi-dressé	halbaufrecht	semierecto	Erfurter Zweg, Fastman	3
		horizontal	horizontal	waagerecht	horizontal	Isabel, Opaal	5

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
5. (*)	**VG/ MS**	**Leaf: length**	**Feuille: longueur**	**Blatt: Länge**	**Hoja: longitud**		
QN	**(a)**	very short	très courte	sehr kurz	muy corta		1
		short	courte	kurz	corta	Nagano, Opaal	3
		medium	moyenne	mittel	media	Aviso, Fanch	5
		long	longue	lang	larga	Géant de Naples tardif, Snow March + Memphis	7
		very long	très longue	sehr lang	muy larga	Magnifico, Paradiso	9
6. (*)	**VG/ MS**	**Leaf: width**	**Feuille: largeur**	**Blatt: Breite**	**Hoja: anchura**		
QN	**(a)**	very narrow	très étroite	sehr schmal	muy estrecha	Alverda, Géant de Naples tardif	1
		narrow	étroite	schmal	estrecha	Andes, Capvert	3
		medium	moyenne	mittel	media	Broden, Lindon	5
		broad	large	breit	ancha	Memphis, Vogue	7
		very broad	très large	sehr breit	muy ancha	Torens	9
7. (*)	**VG**	**Leaf: ratio width/length**	**Feuille : rapport largeur/longueur**	**Blatt: Verhältnis Länge/Breite**	**Hoja: relación anchura/longitud**		
QN	**(a)**	small	petit	klein	pequeña	Akita, Géant de Naples tardif	3
		medium	moyen	mittel	media	Astell, Buren	5
		large	grand	groß	grande	Arbon, Lazio	7
8. (+)	**VG**	**Leaf: lobing**	**Feuille : découpure du bord**	**Blatt: Lappung**	**Hoja: lobulado**		
QL	**(a)**	absent	absente	fehlend	ausente	Idol	1
		present	présente	vorhanden	presente	Atao, Minaret, Romanesco ottobrino,	9

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
9.	**VG**	**Leaf: color (with wax if present)**	**Feuille : couleur (avec la pruine éventuellement)**	**Blatt : Farbe (mit Wachs, sofern vorhanden)**	**Hoja: color (incluida la pruína, si está presente)**		
PQ	**(a)**	green	verte	grün	verde	Baltimore, Belot, Lecerf	1
		grey green	vert gris	graugrün	verde grisáceo	Calisa, Delira, Géant de Naples tardif	2
		blue green	vert bleu	blaugrun	verde azulado	Arbon, Barrier Reef, Ciren	3
10. (*)	**VG**	**Leaf: intensity of color (as for 9)**	**Feuille : intensité de la couleur (comme pour 9)**	**Blatt : Intensität der Farbe (wie unter 9)**	**Hoja: intensidad del color (como en el 9)**		
QN	**(a)**	light	claire	hell	clara	Baltimore, Ciren	3
		medium	moyenne	mittel	media	Barrier Reef, Belot, Calisa	5
		dark	foncée	dunkel	oscura	Arbon, Lecerf	7
11.	**VG**	**Leaf: twisting of tip**	**Feuille: torsion du sommet**	**Blatt: Drehung der Spitze**	**Hoja: torsión del ápice**		
QN	**(a)**	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Akita, Alverda	1
		weak	faible	gering	débil	Belot, Di Jesi	3
		medium	moyenne	mittel	media	Barca, Imola	5
		strong	forte	stark	fuerte	Oceano, Sernio	7
		very strong	très forte	sehr stark	muy fuerte		9
12.	**VG**	**Leaf: shape in cross-section**	**Feuille: forme en section transversale**	**Blatt: Form im Querschnitt**	**Hoja: forma de la sección transversal**		
QN	**(a)**	concave	concave	konkav	cóncava	Bruce, Géant de Naples tardif	1
		flat	plane	eben	plana	Akita, Emeraude	2
		convex	convexe	konvex	convexa	Cortes, Fanch	3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
13.	**VG**	**Leaf: blistering**	**Feuille: cloqûre**	**Blatt: Blasigkeit**	**Hoja: abullonado**		
QN	**(a)**	absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil	Akita, Lecerf	1
		weak	faible	gering	débil	Alpen, Opaal,	3
		medium	moyenne	mittel	medio	Montano, Nautilus, Sergeant	5
		strong	forte	stark	fuerte	Sernio, Siria	7
		very strong	très forte	sehr stark	muy fuerte		9
14. **(+)**	**VG**	**Leaf: crimping near main vein**	**Feuille: plissement à proximité de la nervure principale**	**Blatt : Faltung nahe der Hauptader**	**Hoja: ondulado cerca del nervio principal**		
QN	**(a)**	absent or very weak	nul ou très faible	fehlend oder sehr gering	ausente o muy débil	Avelek, Fangio	1
		weak	faible	gering	débil	Balmoral, Flanca	3
		medium	moyen	mittel	medio	Mexico, Vinson	5
		strong	fort	stark	fuerte	Akito, Sernio	7
		very strong	très fort	sehr stark	muy fuerte	Izoar, Minioc	9
15.	**VG**	**Leaf: undulation of margin**	**Feuille: ondulation du bord**	**Blatt: Wellung des Randes**	**Hoja: ondulación del borde**		
QN	**(a)**	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Étoile 23, Géant de Naples	1
		weak	faible	gering	débil	Akita, Beluga	3
		medium	moyenne	mittel	media	Admirable, Alice Springs	5
		strong	forte	stark	fuerte	Purdy, Siria	7
		very strong	très forte	sehr stark	muy fuerte	Celebrity	9
16. **(*)**	**VG**	**Curd: covering by inner leaves**	**Pomme: couverture par les feuilles internes**	**Blume: Deckung durch innere Blätter**	**Cogollo: cobertura de las hojas internas**		
QN	**(b)**	not covered	pas couverte	nicht gedeckt	descubierto	Capvert, Opaal	1
		partly covered	partiellement couverte	teilweise gedeckt	parcialmente cubierto	Celesta, Eskimo	2
		fully covered	complètement couverte	vollständig gedeckt	completamente cubierto	Amistad, Charif	3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
17. (*) (+)	**MS**	**Curd: height**	**Pomme: hauteur**	**Blume: Höhe**	**Cogollo: altura**		
QN	**(b)**	short	basse	niedrig	baja	Lecerf, Mechelse 2	3
		medium	moyenne	mittel	media	Kernis, Tetris	5
		tall	haute	hoch	alta	Amistad, Gitano	7
18. (*)	**MS**	**Curd: diameter**	**Pomme: diamètre**	**Blume: Durchmesser**	**Cogollo: diámetro**		
QN	**(b)**	small	petit	klein	pequeño	Alverda, Lumina	3
		medium	moyen	mittel	medio	Barrier Reef, Malaga	5
		large	grand	gross	grande	Fremont, Novia, Plessi	7
19. (*) (+)	**VG**	**Curd: shape in longitudinal section**	**Pomme: forme en section longitudinale**	**Blume: Form im Längsschnitt**	**Cogollo: forma de la sección longitudinal**		
PQ	**(b)**	circular	circulaire	rund	circular	Gipsy Moth, Linero	1
		transverse broad elliptic	elliptique transverse large	breit quer elliptisch	elíptica transversal amplia	Aviron, Melody	2
		transverse medium elliptic	elliptique transverse moyenne	mittel quer elliptisch	elíptica transversal media	Akita, Celesta	3
		transverse narrow elliptic	elliptique transverse étroite	schmal quer elliptisch	elíptica transversal estrecha	Erfurter, Lecerf	4
		triangular	triangulaire	dreieckig	triangular	Minaret, Romanesco ottobrino	5
20. (*) (+)		**<u>Varieties with triangular curds excluded</u>: Curd: doming**	**<u>Variétés à pomme triangulaire exclues</u> : Pomme: courbure du sommet**	**<u>Sorten mit dreieckiger Blume ausgenommen:</u> Blume: Wölbung**	**<u>Excluidas las variedades de cogollo triangular</u>: Cogollo: abovedado**		
	(b)	weak	faible	gering	débil	Burgh, Lecerf	3
		medium	moyenne	mittel	medio	Akita, Géant de Naples tardif	5
		strong	forte	stark	fuerte	Belot, White Rock	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
21. (*)	**VG**	**Curd: color**	**Pomme: couleur**	**Blume: Farbe**	**Cogollo: color**		
PQ	**(b)**	whitish	blanchâtre	weisslich	blanquecino	Astell, Iceberg	1
		yellow	jaune	gelb	amarillo	Di Jesi	2
		orange	orange	orange	naranja	Cheddar, Sunset	3
		green	verte	grün	verde	Alverda, Amfora, Minaret	4
		violet	violette	violett	violeta	Graffiti	5
22. (+)	**VG**	**Curd: knobbling**	**Pomme: relief**	**Blume: Höckerbildung**	**Cogollo: protuberancias irregulares**		
QN	**(b)**	very fine	très fin	sehr fein	muy finas		1
		fine	fin	fein	finas	Nautilus, Opaal	3
		medium	moyen	mittel	medias	Corvilia, Nedeleg	5
		coarse	grossier	grob	gruesas	Niagara	7
		very coarse	très grossier	sehr grob	muy gruesas	Minaret, Navona	9
23. (+)	**VG**	**Curd: texture**	**Pomme: granulation**	**Blume: Körnung**	**Cogollo: textura**		
QN	**(b)**	fine	fine	fein	fina	Boris, Erfurter	3
		medium	moyenne	mittel	media	Beluga, Galiote	5
		coarse	grossière	grob	gruesa	Géant de Naples tardif, Niagara	7
24.	**VG**	**Curd: anthocyanin coloration after harvest maturity**	**Pomme: pigmentation anthocyanique après maturité de récolte**	**Blume: Anthocyanfärbung nach der Erntereife**	**Cogollo: coloración antociánica después de la madurez para la cosecha**		
QL		absent	absente	fehlend	ausente	Evita, Mantis	1
		present	présente	vorhanden	presente	Flanca, Planita	9
25. (*)	**VG**	**Flower: color**	**Fleur: couleur**	**Blüte: Farbe**	**Flor: color**		
QL		white	blanche	weiss	blanco	Bruce, Ecrin	1
		yellow	jaune	gelb	amarillo	Flora Blanca, Lecerf	2

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
26.1 (*) (+)	**MS**	**Earliness in spring/summer trial (50% at harvest maturity)**	**Précocité de l'essai au printemps/en été (50% à maturité de récolte)**	**Frühzeitigkeit im Frühjahrs-/Sommeranbau (50% erntereif)**	**Precocidad en el ensayo de primavera/verano (50% en madurez para la cosecha)**		
QN		very early	très précoce	sehr früh	muy precoz		1
		early	précoce	früh	precoz		3
		medium	moyenne	mittel	media		5
		late	tardive	spät	tardía		7
		very late	très tardive	sehr spät	muy tardía		9
26.2 (*) (+)	**MS**	**Earliness in autumn/early winter trial (50% at harvest maturity)**	**Précocité de l'essai à l'automne/au début de l'hiver (50% à maturité de récolte)**	**Frühzeitigkeit im Herbst-/frühen Winteranbau (50% erntereif)**	**Precocidad en el ensayo de otoño/principios de invierno(50% en madurez para la cosecha)**		
QN		very early	très précoce	sehr früh	muy precoz		1
		early	précoce	früh	precoz		3
		medium	moyenne	mittel	media		5
		late	tardive	spät	tardía		7
		very late	très tardive	sehr spät	muy tardía		9
26.3 (*) (+)	**MS**	**Earliness in over winter trial (50% at harvest maturity)**	**Précocité de l'essai à la fin de l'hiver (50% à maturité de récolte)**	**Frühzeitigkeit im Überwinterungs-anbau (50% erntereif)**	**Precocidad en el ensayo de invierno (50% en madurez para la cosecha)**		
QN		very early	très précoce	sehr früh	muy precoz		1
		early	précoce	früh	precoz		3
		medium	moyenne	mittel	media		5
		late	tardive	spät	tardía		7
		very late	très tardive	sehr spät	muy tardía		9

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
27. (*) (+)	**VG**	**Male sterility**	**Stérilité mâle**	**Männliche Sterilität**	**Androesterilidad**		
QL		absent	absente	fehlend	ausente	Alpha 2, Flora Blanca	1
		partial	partielle	partiell	parcial	Dunvez, Odegwen	2
		total	totale	vollständig	total	Aviron, Bodilis	3

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: Observations on the foliage and the leaf which should be made at the time of full development of the foliage, before curd formation.

(b) Curd: Observations on the curd which should be made when the curd is fully developed, (at harvest maturity).

8.2 Explanations for individual characteristics

Ad. 4: Leaf: attitude

1	3	5
erect	semi-erect	horizontal

Ad. 8: Leaf: lobing

1	9
absent	présent

Ad. 14: Leaf: crimping near main vein

1	5	9
absent or very weak	medium	very strong

Ad. 17: Curd: height

3
short

5
medium

7
tall

Ad. 19: Curd: shape in longitudinal section
Ad. 20: Varieties with triangular curds excluded: Curd: doming

Curd: doming (char. 20)

weak

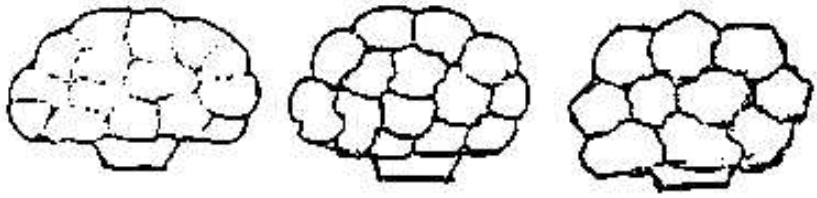
medium

strong

	1	2	3	4
Curd: shape in longitudinal section (char. 19)	circular	transverse broad elliptic	transverse medium elliptic	transverse narrow elliptic

Ad. 22: Curd: knobbling

lateral view



3	5	7
fine	medium	coarse

Ad. 23: Curd: texture

The texture is “fine”when the surface of the curd is very smooth and is “coarse”when the surface of the curd is granular.

Ad. 26.1: Earliness in spring/summer trial (50% at harvest maturity)
Ad. 26.2: Earliness in autumn/early winter trial (50% at harvest maturity)
Ad. 26.3: Earliness in over winter trial (50% at harvest maturity)

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

Characteristic 26.1: Earliness in spring/summer trial (50% at harvest maturity)
Characteristic 26.2: Earliness in autumn/early winter trial (50% at harvest maturity)
Characteristic 26.3: Earliness in over winter trial (50% at harvest maturity)

Characteristic 26 : Earliness in specific growing season (50% at harvest maturity)

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

Ad. 27: Male sterililty

Absent = open varieties
Partial = heterozygotic genetic sterility
Total = sterile cytoplasm

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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Wiebe, H.J., 1981: Influence of transplant characteristics and growing conditions on curd size (buttoning) of cauliflower, Acta Hort. 122, pp. 99-105

9. 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

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.

1. Subject of the Technical Questionnaire

1.1 Botanical Name	*Brassica oleracea* L. convar. *botrytis* (L.) Alef. var *botrytis* L.
1.2 Common Name	Cauliflower

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

(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)

[#] 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:

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 (1)	**Seedling: anthocyanin coloration of hypocotyl**		
	absent	Brio	1[ ]
	present	Ciren, Dominant	9[ ]
5.2 (10)	**Leaf: intensity of color (with wax if present)**		
	light	Baltimore, Ciren	3[ ]
	medium	Barrier Reef, Belot, Calisa	5[ ]
	dark	Arbon, Lecerf	7[ ]
5.3 (21)	**Curd: color**		
	whitish	Astell, Iceberg	1[ ]
	yellow	Di Jesi	2[ ]
	orange	Cheddar, Sunset	3[ ]
	verte	Alverda, Amfora, Minaret	4[ ]
	violet	Graffiti	5[ ]
5.4 (25)	**Flower: color**		
	white	Bruce, Ecrin	1[ ]
	yellow	Flora Blanca, Lecerf	2[ ]

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

	Characteristics	Example Varieties	Note
5.5(i) (26.1)	**Earliness in spring/summer trial (50% at harvest maturity)**		
	very early		1[ ]
	early		3[ ]
	medium		5[ ]
	late		7[ ]
	very late		9[ ]
5.5(ii) (26.2)	**Earliness in autumn/early winter trial (50% at harvest maturity)**		
	very early		1[ ]
	early		3[ ]
	medium		5[ ]
	late		7[ ]
	very late		9[ ]
5.5(ii) (26.3)	**Earliness in over winter trial (50% at harvest maturity)**		
	very early		1[ ]
	early		3[ ]
	medium		5[ ]
	late		7[ ]
	very late		9[ ]
5.6 (27)	**Male sterility**		
	absent	Alpha 2, Flora blanca	1[ ]
	intermediate	Dunvez, Odegwen	2[ ]
	present	Aviron, Bodilis	3[ ]

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

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 **similar** variety(ies)	Describe the expression of the characteristic(s) for **your** candidate variety
Example	*Curd: color*	*yellow*	*orange*

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 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.

[#] 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:

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]