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ECHINACEA

UPOV Code(s): ECNCE

Echinacea Moench

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

*prepared by an expert from the United Kingdom**to be considered by the**Technical Committee at its fifty-seventh session
to be held in Geneva on October 25 and 26, 2021**Disclaimer: this document does not represent UPOV policies or guidance*

Alternative names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Echinacea</i> Moench	Echinacea, Cone Flower	Échinacée	Echinacea, Igelkopf	Equinácea

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 *Echinacea* Moench.

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 young plants, or seed.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

vegetatively propagated varieties: 10 young plants
seed propagated varieties: a sufficient quantity of seed to produce 40 plants

In the case of seed, 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*

3.1.1 The minimum duration of tests should normally be a single growing cycle.

3.1.2 The testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.

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 Because daylight varies, color determinations made against a color chart should be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room without direct sunlight. The spectral distribution of the illuminant for artificial daylight should conform with the CIE Standard of Preferred Daylight D 6500 and should fall within the tolerances set out in the British Standard 950, Part I. These determinations should be made with the plant part placed against a white background. The color chart and version used should be specified in the variety description.

3.4 *Test Design*

- 3.4.1 In the case of vegetatively propagated varieties, each test should be designed to result in a total of at least 10 plants.
- 3.4.2 In the case of seed-propagated varieties, each test should be designed to result in a total of at least 40 plants which should be divided between at least 2 replicates.
- 3.4.3 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 *Additional Tests*

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 *Distinctness*

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.1.4 Number of Plants or Parts of Plants to be Examined

In the case of vegetatively propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 9 plants or parts taken from each of 9 plants and any other observation made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 1.

In the case of seed-propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 30 plants or parts taken from each of 30 plants and any other observation made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 1.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the Table of Characteristics (see document TGP/9 "Examining Distinctness", Section 4 "Observation of characteristics"):

MG: single measurement of a group of plants or parts of plants

MS: measurement of a number of individual plants or parts of plants

VG: visual assessment by a single observation of a group of plants or parts of plants

VS: visual assessment by observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

"Visual" observation (V) is an observation made on the basis of the expert's judgment. For the purposes of this document, "visual" observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, "G" provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

4.2 *Uniformity*

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 These Test Guidelines have been developed for the examination of vegetatively propagated and cross-pollinated seed propagated varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.

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

4.2.4 For the assessment of uniformity of vegetatively propagated varieties, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 10 plants, 1 off-type is 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 further examined by testing a new seed or plant stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

5. Grouping of Varieties and Organization of the Growing Trial
- 5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.
- 5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.
- 5.3 The following have been agreed as useful grouping characteristics:
- (a) Plant: height (characteristic 2)
 - (b) Leaf: variegation (characteristic 11)
 - (c) Ray floret: main color of inner side (characteristic 28) with the following groups:
 - Gr. 1: green
 - Gr. 2: white
 - Gr. 3: yellow
 - Gr. 4: orange
 - Gr. 5: red
 - Gr. 6: pink
 - Gr. 7: purple
 - (d) Disc: type (characteristic 36)
 - (e) Disc: color of tip of paleae (spikes) (characteristic 44)
 - (f) Only varieties with disc type: anemone: Disc: color after disc florets open (characteristic 47) with the following groups:
 - Gr. 1: green
 - Gr. 2: white
 - Gr. 3: yellow
 - Gr. 4: orange
 - Gr. 5: red
 - Gr. 6: pink
 - Gr. 7: purple
- 5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 "Examining Distinctness".
6. Introduction to the Table of Characteristics
- 6.1 *Categories of Characteristics*
- 6.1.1 Standard Test Guidelines Characteristics
- Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.
- 6.1.2 Asterisked Characteristics
- Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 States of Expression and Corresponding Notes

6.2.1 States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.2.2 All relevant states of expression are presented in the characteristic.

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

6.3 Types of Expression

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

6.4 Example Varieties

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

6.5 Legend

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

1 Characteristic number

2 (*) Asterisked characteristic – see Chapter 6.1.2

3 Type of expression

QL Qualitative characteristic – see Chapter 6.3

QN Quantitative characteristic – see Chapter 6.3

PQ Pseudo-qualitative characteristic – see Chapter 6.3

4 Method of observation (and type of plot, if applicable)

MG, MS, VG, VS – see Chapter 4.1.5

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

6 (a)-(d) See Explanations on the Table of Characteristics in Chapter 8.1

7 Not applicable

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

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	QN VG					
	Plant: growth habit	Plante : port	Pflanze: Wuchsform	Planta: hábito de crecimiento		
	upright	dressé	aufrecht	erecto	Mount Hood	1
	semi upright	demi-dressé	halbaufrecht	semierecto	Ida, Green Jewel	2
	semi spreading	demi-étalé	halbbreitwüchsig	semirrastrero	Mistral	3
	spreading	étalé	breitwüchsig	rastrero		4
2. (*)	QN MG/MS/VG	(+)				
	Plant: height	Plante : hauteur	Pflanze: Höhe	Planta: altura		
	very short	très courte	sehr niedrig	muy baja	SWEET271	1
	very short to short	très courte à courte	sehr niedrig bis niedrig	muy baja a baja		2
	short	courte	niedrig	baja	ECHOR273	3
	short to medium	courte à moyenne	niedrig bis mittel	baja a media		4
	medium	moyenne	mittel	media	Noectwo	5
	medium to tall	moyenne à haute	mittel bis hoch	media a alta		6
	tall	haute	hoch	alta	Razzmatazz	7
	tall to very tall	haute à très haute	hoch bis sehr hoch	alta a muy alta		8
	very tall	très haute	sehr hoch	muy alta		9
3.	QN VG	(+)				
	Plant: floriferousness	Plante : floribondité	Pflanze: Blütenreichhaltigkeit	Planta: capacidad florifera		
	very weak	très faible	sehr gering	muy baja		1
	weak	faible	gering	baja	Razzmatazz	2
	medium	moyenne	mittel	media	SWEET271	3
	strong	forte	groß	alta	Hilmoococy	4
	very strong	très forte	sehr groß	muy alta		5
4.	PQ VG	(+)				
	Stem: color	Tige : couleur	Trieb: Farbe	Tallo: color		
	green	vert	grün	verde	Green Jewel	1
	green tinged weakly purple	vert légèrement teinté de pourpre	grün leicht meliert mit purpurn	verde levemente teñido de púrpura	Catharina	2
	green tinged strongly purple	vert fortement teinté de pourpre	grün stark meliert mit purpurn	verde fuertemente teñido de púrpura	Merlot	3
	purple	pourpre	purpurn	púrpura	Fatal Attraction	4

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.	QN VG					
	Stem: number of leaves	Tige : nombre de feuilles	Trieb: Anzahl Blätter	Tallo: número de hojas		
	very few	très petit	sehr gering	muy bajo		1
	few	petit	gering	bajo	SWEET271	2
	medium	moyen	mittel	medio	ECHOR273	3
	many	grand	groß	alto	Hilmooocosy	4
	very many	très grand	sehr groß	muy alto		5
6. (*)	QN MS/VG	(+) (a)				
	Leaf: length	Feuille : longueur	Blatt: Länge	Hoja: longitud		
	very short	très courte	sehr kurz	muy corta		1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta		2
	short	courte	kurz	corta	Mistral	3
	short to medium	courte à moyenne	kurz bis mittel	corta a media		4
	medium	moyenne	mittel	media	Merlot	5
	medium to long	moyenne à longue	mittel bis lang	media a larga		6
	long	longue	lang	larga	Green Jewel	7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga		8
	very long	très longue	sehr lang	muy larga		9
7. (*)	QN MS/VG	(a)				
	Leaf: width	Feuille : largeur	Blatt: Breite	Hoja: anchura		
	very narrow	très étroite	sehr schmal	muy estrecha		1
	very narrow to narrow	très étroite à étroite	sehr schmal bis schmal	muy estrecha a estrecha		2
	narrow	étroite	schmal	estrecha	Purity	3
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media		4
	medium	moyenne	mittel	media	Green Jewel	5
	medium to broad	moyenne à large	mittel bis breit	media a ancha		6
	broad	large	breit	ancha	Catharina	7
	broad to very broad	large à très large	breit bis sehr breit	ancha a muy ancha		8
	very broad	très large	sehr breit	muy ancha		9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
8. (*)	QN	MS/VG	(a)			
	Leaf: length/width ratio	Feuille : rapport longueur/largeur	Blatt: Verhältnis Länge/Breite	Hoja: relación entre la longitud y la anchura		
	very low	très bas	sehr klein	muy baja		1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja		2
	low	bas	klein	baja	Merlot	3
	low to medium	bas à moyen	klein bis mittel	baja a media	Hilmoococy	4
	medium	moyen	mittel	media		5
	medium to high	moyen à élevé	mittel bis groß	media a alta		6
	high	élevé	groß	alta	Secret Glow	7
	high to very high	élevé à très élevé	groß bis sehr groß	alta a muy alta		8
	very high	très élevé	sehr groß	muy alta		9
9.	QN	VG	(a)			
	Leaf blade: position of broadest part	Limbe : position de la partie la plus large	Blattspreite: Position des breitesten Teils	Limbo: posición de la parte más ancha		
	at middle or slightly towards base	au milieu ou légèrement vers la base	in der Mitte oder leicht zur Basis hin	en el medio o ligeramente hacia la base		1
	moderately towards base	plus ou moins vers la base	mäßig zur Basis hin	moderadamente hacia la base	ECHOR273	2
	strongly towards base	fortement vers la base	stark zur Basis hin	fuertemente hacia la base	Milkshake	3
10.	QN	VG	(a)			
	Leaf: intensity of green color	Feuille : intensité de la couleur verte	Blatt: Intensität der Grünfärbung	Hoja: intensidad del color verde		
	light	claire	hell	clara	Tomato Soup	1
	medium	moyenne	mittel	media	Purity	2
	dark	foncée	dunkel	oscura	Fatal Attraction	3
11. (*)	QL	VG	(a)			
	Leaf: variegation	Feuille : panachure	Blatt: Panaschierung	Hoja: variegación		
	absent	absente	fehlend	ausente	ECHOR273	1
	present	présente	vorhanden	presente	Prairie Frost	9

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12. (*)	QN	VG	(a)				
	Leaf: rugosity	Feuille : rugosité	Blatt: Rauheit	Hoja: rugosidad			
	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente a muy débil	Hot Papaya	1	
	very weak to weak	très faible à faible	sehr gering bis gering	muy débil a débil		2	
	weak	faible	gering	débil	Summer Cocktail	3	
	weak to medium	faible à moyenne	gering bis mittel	débil a media		4	
	medium	moyenne	mittel	media	Green Jewel	5	
	medium to strong	moyenne à forte	mittel bis stark	media a fuerte		6	
	strong	forte	stark	fuerte	Catharina	7	
	strong to very strong	forte à très forte	stark bis sehr stark	fuerte a muy fuerte		8	
	very strong	très forte	sehr stark	muy fuerte		9	
13.	QN	VG	(a)				
	Leaf: glossiness	Feuille : brillance	Blatt: Glanz	Hoja: brillo			
	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente a muy débil	Mistral	1	
	weak	faible	gering	débil	After Midnight	2	
	medium	moyenne	mittel	medio		3	
	strong	forte	stark	fuerte	Pineapple Sundae	4	
	very strong	très forte	sehr stark	muy fuerte		5	
14. (*)	QN	VG	(+)	(a)			
	Leaf: indentations of margin	Feuille : denticulations du bord	Blatt: Anzahl Randeinschnitte	Hoja: número de indentaciones del borde			
	absent or very few	absentes ou très rares	fehlend oder sehr gering	ausente o muy escaso	Hot Papaya	1	
	few	rares	gering	escaso	Catharina	2	
	medium	assez nombreuses	mittel	medio	Green Jewel	3	
	many	nombreuses	groß	elevado		4	
	very many	très nombreuses	sehr groß	muy elevado		5	
15. (*)	PQ	VG					
	Peduncle: color	Pédoncule : couleur	Blütenstandstiel: Farbe	Pedúnculo: color			
	green	vert	grün	verde	Green Jewel	1	
	green tinged weakly purple	vert légèrement teinté de pourpre	grün leicht meliert mit purpurn	verde débilmente teñido de púrpura	Hilmoocosy	2	
	green tinged strongly purple	vert fortement teinté de pourpre	grün stark meliert mit purpurn	verde fuertemente teñido de púrpura		3	
	purple	pourpre	purpurn	púrpura	After Midnight	4	

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16.	QN VG					
	Peduncle: pubescence	Pédoncule : pilosité	Blütenstandstiel: Behaarung	Pedúnculo: pubescencia		
	absent or sparse	absente ou faible	fehlend oder gering	ausente o laxa	Hot Papaya	1
	medium	moyenne	mittel	media	Hilmoococy	2
	dense	dense	stark	densa	Green Jewel	3
17. (*)	QN MS/VG	(+) (b)				
	Flower head: diameter	Capitule : diamètre	Blütenkopf: Durchmesser	Capítulo: diámetro		
	very small	très petit	sehr klein	muy pequeño		1
	very small to small	très petit à petit	sehr klein bis klein	muy pequeño a pequeño	Hilmoococy	2
	small	petit	klein	pequeño		3
	small to medium	petit à moyen	klein bis mittel	pequeño a medio		4
	medium	moyen	mittel	medio	Green Jewel	5
	medium to large	moyen à grand	mittel bis groß	medio a ancho		6
	large	grand	groß	ancho	Merlot	7
	large to very large	grand à très grand	groß bis sehr groß	ancho a muy ancho		8
	very large	très grand	sehr groß	muy ancho		9
18. (*)	QN MS/VG	(+) (b)				
	Flower head: height	Capitule : hauteur	Blütenkopf: Höhe	Capítulo: altura		
	very short	très courte	sehr niedrig	muy pequeña		1
	very short to short	très courte à courte	sehr niedrig bis niedrig	muy pequeña a pequeña	SWEET271	2
	short	courte	niedrig	pequeña	ECHOR273	3
	short to medium	courte à moyenne	niedrig bis mittel	pequeña a media		4
	medium	moyenne	mittel	media	Mistral	5
	medium to tall	moyenne à haute	mittel bis hoch	media a alta		6
	tall	haute	hoch	alta	Hot Papaya	7
	tall to very tall	haute à très haute	hoch bis sehr hoch	alta a muy alta		8
	very tall	très haute	sehr hoch	muy alta		9

	English		français		deutsch	español	Example Varieties Exemples Beispielsorten Variedades ejemplo	Note/ Nota
19. (*)	QN	MS/VG	(+)	(b)				
	Flower head: number of ray florets	Capitule : nombre de fleurs ligulées	Blütenkopf: Anzahl Randblüten	Capítulo: número de flores liguladas				
	very few	très petit	sehr gering	muy escaso				1
	very few to few	très petit à petit	sehr gering bis gering	muy escaso a escaso				2
	few	petit	gering	escaso	Tiki Torch			3
	few to medium	petit à moyen	gering bis mittel	escaso a medio				4
	medium	moyen	mittel	medio	Mistral			5
	medium to many	moyen à grand	mittel bis groß	medio a elevado				6
	many	grand	groß	elevado	Fatal Attraction			7
	many to very many	grand à très grand	groß bis sehr groß	elevado a muy elevado				8
	very many	très grand	sehr groß	muy elevado				9
20. (*)	QN	VG	(+)	(b)				
	Flower head: attitude of ray florets at origin	Capitule : port des fleurs ligulées à l'origine	Blütenkopf: Haltung der Randblüten am Ansatz	Capítulo: porte de flores liguladas en la base				
	semi-erect	demi-dressé	halbaufrecht	semierecto				1
	horizontal	horizontal	waagrecht	horizontal	Merlot			2
	semi-drooping	demi-retombant	halbüberhängend	semicolgante	Mount Hood			3
	drooping	retombant	überhängend	colgante	Hot Papaya			4
21. (*)	QN	VG	(+)					
	Flower head: relative number of ligulate ray florets	Capitule : nombre relatif de fleurs ligulées	Blütenkopf: relative Anzahl zungenförmiger Randblüten	Capítulo: número relativo de flores liguladas de lígula totalmente plana				
	none	aucun	keine	ninguna	All that Jazz			1
	few	petit	gering	escaso				2
	medium	moyen	mittel	medio				3
	many	grand	groß	elevado	Sundown			4
	all or almost all	toutes ou presque toutes	alle oder fast alle	todas o casi todas	Merlot			5
22. (*)	QN	VG	(+)	(b)				
	Flower head: relative number of spatulate ray florets	Capitule : nombre relatif de fleurs spatulées	Blütenkopf: relative Anzahl spatelförmiger Randblüten	Capítulo: número relativo de flores liguladas espatuladas				
	none	aucun	keine	ninguna				1
	few	petit	gering	escaso	All that Jazz			2
	medium	moyen	mittel	medio	Sundown			3
	many	grand	groß	elevado				4
	all or almost all	toutes ou presque toutes	alle oder fast alle	todas o casi todas				5

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
23. (*)	QN	VG	(+)	(b)				
	Flower head: relative number of quilled ray florets	Capitule : nombre relatif de fleurs tubulées	Blütenkopf: relative Anzahl röhrenförmiger Randblüten	Capítulo: número relativo de flores liguladas enrolladas				
	none	aucun	keine	ninguna				1
	few	petit	gering	escaso	Sundown			2
	medium	moyen	mittel	medio				3
	many	grand	groß	elevado	All that Jazz			4
	all or almost all	toutes ou presque toutes	alle oder fast alle	todas o casi todas				5
24. (*)	QN	MS/VG		(b), (c)				
	Ray floret: length	Fleur ligulée : longueur	Randblüte: Länge	Flor ligulada: longitud				
	very short	très courte	sehr kurz	muy corta				1
	very short to short	très courte à courte	sehr kurz bis kurz	muy corta a corta				2
	short	courte	kurz	corta	Fatal Attraction			3
	short to medium	courte à moyenne	kurz bis mittel	corta a media				4
	medium	moyenne	mittel	media	Merlot			5
	medium to long	moyenne à longue	mittel bis lang	media a larga				6
	long	longue	lang	larga	Tomato Soup			7
	long to very long	longue à très longue	lang bis sehr lang	larga a muy larga				8
	very long	très longue	sehr lang	muy larga				9
25. (*)	QN	MS/VG		(b), (c)				
	Ray floret: width	Fleur ligulée : largeur	Randblüte: Breite	Flor ligulada: anchura				
	very narrow	très étroite	sehr schmal	muy estrecha				1
	very narrow to narrow	très étroite à étroite	sehr schmal bis schmal	muy estrecha a estrecha				2
	narrow	étroite	schmal	estrecha	Fatal Attraction			3
	narrow to medium	étroite à moyenne	schmal bis mittel	estrecha a media				4
	medium	moyenne	mittel	media	Summer Cocktail			5
	medium to broad	moyenne à large	mittel bis breit	media a elevada				6
	broad	large	breit	elevada	Milkshake			7
	broad to very broad	large à très large	breit bis sehr breit	elevada a muy elevada				8
	very broad	très large	sehr breit	muy elevada				9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26. (*)	QN MS/VG	(b), (c)				
	Ray floret: length/width ratio	Fleur ligulée : rapport longueur/largeur	Randblüte: Verhältnis Länge/Breite	Flor ligulada: relación entre la longitud y la anchura		
	very low	très bas	sehr klein	muy baja		1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja		2
	low	bas	klein	baja		3
	low to medium	bas à moyen	klein bis mittel	baja a media	Hilmoococy	4
	medium	moyen	mittel	media	Razzmatazz	5
	medium to high	moyen à élevé	mittel bis groß	media a elevada		6
	high	élevé	groß	elevada	Mount Hood	7
	high to very high	élevé à très élevé	groß bis sehr groß	elevada a muy elevada		8
	very high	très élevé	sehr groß	muy elevada	Secret Glow	9
27. (*)	PQ VG	(+)	(b), (c)			
	Only varieties with spatulate or quilled ray florets: Ray floret: color of outer side	Seulement les variétés avec fleurs ligulées spatulées ou tubulées: Fleur ligulée : couleur de la face externe	Nur Sorten mit spatel- oder röhrenförmigen Randblüten: Randblüte: Farbe der Außenseite	Solo variedades con flores liguladas espatuladas o enrolladas: Flor ligulada: color de la cara externa		
	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)		
28. (*)	PQ VG	(b), (c), (d)				
	Ray floret: main color of inner side	Fleur ligulée : couleur principale de la face interne	Randblüte: Hauptfarbe der Innenseite	Flor ligulada: color principal de la cara interna		
	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)		
29. (*)	PQ VG	(b), (c), (d)				
	Ray floret: secondary color of inner side	Fleur ligulée : couleur secondaire de la face interne	Randblüte: Sekundärfarbe der Innenseite	Flor ligulada: color secundario de la cara interna		
	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)		

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30. (*)	PQ	VG	(+)	(d)				
	Ray floret: distribution of secondary color of inner side	Fleur ligulée : distribution de la couleur secondaire de la face interne	Randblüte: Verteilung der Sekundärfarbe der Innenseite	Flor ligulada: distribución del color secundario de la cara interna				
	none	aucune	keine	ausente				1
	at base	à la base	an der Basis	en la base				2
	basal quarter	quart basal	im basalen Viertel	en el cuarto basal				3
	distal half	moitié distale	in der distalen Hälfte	en la mitad distal				4
	distal quarter	quart distal	im distalen Viertel	en el cuarto distal				5
	at tip	à l'extrémité	an der Spitze	en el ápice				6
31.	QN	VG	(+)	(b), (c)				
	Ray floret: curvature	Fleur ligulée : courbure	Randblüte: Biegung	Flor ligulada: curvatura				
	strongly incurving	fortement incurvée	stark aufgebogen	muy incurvada				1
	weakly incurving	faiblement incurvée	schwach aufgebogen	levemente incurvada	Green Jewel			2
	straight	droite	gerade	recta	Mount Hood			3
	weakly recurving	faiblement récurvée	schwach zurückgebogen	levemente recurvada	ECHOR273			4
	strongly recurving	fortement récurvée	stark zurückgebogen	muy recurvada	Hot Papaya			5
32.	QN	VG		(b), (c)				
	Ray floret: twisting	Fleur ligulée : torsion	Randblüte: Drehung	Flor ligulada: torsión				
	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente a muy débil	Merlot			1
	weak	faible	gering	débil	Hot Papaya			2
	medium	moyenne	mittel	media	Noectwo			3
	strong	forte	stark	fuerte				4
	very strong	très forte	sehr stark	muy fuerte				5
33. (*)	QN	VG	(+)	(b), (c)				
	Ray floret: profile in cross section	Fleur ligulée : profil en section transversale	Randblüte: Profil im Querschnitt	Flor ligulada: perfil en sección transversal				
	strongly concave	fortement concave	stark konkav	fuertemente cóncavo	Vintage Wine			1
	moderately concave	moyennement concave	mäßig konkav	moderadamente cóncavo	Green Jewel			2
	weakly concave	faiblement concave	schwach konkav	levemente cóncava	Merlot			3
	flat	plate	flach	plano	ECHOR273			4
	weakly convex	faiblement convexe	schwach konvex	levemente convexo	Hilmooocosy			5
	moderately convex	moyennement convexe	mäßig konvex	moderadamente convexo	Noectwo			6
	strongly convex	fortement convexe	stark konvex	fuertemente convexo				7

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
34. (*)	PQ	VG	(+)	(b), (c)				
	Ray floret: shape of apex	Fleur ligulée : forme du sommet	Randblüte: Form des Apex	Flor ligulada: forma del ápice				
	pointed	pointue	spitz	aguda	Purity		1	
	rounded	arrondie	abgerundet	redondeada	Tiki Torch		2	
	truncate	tronquée	gerade	truncada	Green Jewel		3	
35. (*)	QN	VG	(+)	(b), (c)				
	Ray floret: indentations of tip	Fleur ligulée : denticulations du sommet	Randblüte: Einschnitte der Spitze	Flor ligulada: indentaciones de la punta				
	absent or very shallow	absentes ou très peu profondes	fehlend oder sehr flach	ausentes o muy superficiales			1	
	shallow	peu profondes	flach	superficiales	Hot Summer		2	
	medium	moyennes	mittel	medias	Green Jewel		3	
	deep	profondes	tief	profundas	ECHOR273		4	
	very deep	très profondes	sehr tief	muy profundas	Secret Glow		5	
36. (*)	QL	VG	(+)	(b)				
	Disc: type	Disque : type	Scheibe: Typ	Disco: tipo				
	daisy	marguerite	margeritenförmig	margarita	Merlot		1	
	anemone	anémone	anemonenförmig	anémona	Hot Papaya		2	
37. (*)	QN	MS/VG	(+)	(b)				
	<u>Only varieties with disc type: daisy: Disc: diameter</u>	<u>Seulement les variétés avec disque de type : marguerite: Disque : diamètre</u>	<u>Nur Sorten mit Scheiben vom Typ: margeritenförmig: Scheibe: Durchmesser</u>	<u>Solo variedades con tipo de disco: margarita: Disco: diámetro</u>				
	very small	très petit	sehr klein	muy pequeño			1	
	very small to small	très petit à petit	sehr klein bis klein	muy pequeño a pequeño			2	
	small	petit	klein	pequeño	Tomato Soup		3	
	small to medium	petit à moyen	klein bis mittel	pequeño a medio			4	
	medium	moyen	mittel	medio	Summer Cocktail		5	
	medium to large	moyen à grand	mittel bis groß	medio a ancho			6	
	large	grand	groß	ancho	Merlot		7	
	large to very large	grand à très grand	groß bis sehr groß	ancho o muy ancho			8	
	very large	très grand	sehr groß	muy ancho			9	

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
38. (*)	QN MS/VG	(b)				
	<u>Only varieties with disc type: anemone:</u> Disc: diameter	<u>Seulement les variétés avec disque de type : anémone:</u> Disque : diamètre	<u>Nur Sorten mit Scheiben vom Typ: anemonenförmig:</u> Scheibe: Durchmesser	<u>Solo variedades con tipo de disco: anémona:</u> Disco: diámetro		
	very small	très petit	sehr klein	muy pequeño		1
	very small to small	très petit à petit	sehr klein bis klein	muy pequeño a pequeño	SWEET271	2
	small	petit	klein	pequeño		3
	small to medium	petit à moyen	klein bis mittel	pequeño a medio	Secret Glow	4
	medium	moyen	mittel	medio	Razzmatazz	5
	medium to large	moyen à grand	mittel bis groß	medio a ancho		6
	large	grand	groß	ancho	Hot Papaya	7
	large to very large	grand à très grand	groß bis sehr groß	ancho a muy ancho		8
	very large	très grand	sehr groß	muy ancho		9
39. (*)	QN MS/VG	(+) (b)				
	<u>Only varieties with disc type: daisy:</u> Disc: height	<u>Seulement les variétés avec disque de type : marguerite:</u> Disque : hauteur	<u>Nur Sorten mit Scheiben vom Typ: margeritenförmig:</u> Scheibe: Höhe	<u>Solo variedades con tipo de disco: margarita:</u> Disco: altura		
	very short	très basse	sehr niedrig	muy baja		1
	very short to short	très basse à basse	sehr niedrig bis niedrig	muy baja a baja		2
	short	basse	niedrig	baja	Fatal Attraction	3
	short to medium	basse à moyenne	niedrig bis mittel	baja a media		4
	medium	moyenne	mittel	media	Purity	5
	medium to tall	moyenne à haute	mittel bis hoch	media a alta		6
	tall	haute	hoch	alta	After Midnight	7
	tall to very tall	haute à très haute	hoch bis sehr hoch	alta a muy alta		8
	very tall	très haute	sehr hoch	muy alta		9

	English		français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
40. (*)	QN	MS/VG	(b)				
	<u>Only varieties with disc type: anemone:</u> Disc: height	<u>Seulement les variétés avec disque de type : anémone:</u> Disque : hauteur	<u>Nur Sorten mit Scheiben vom Typ: anemonenförmig:</u> Scheibe: Höhe	<u>Solo variedades con tipo de disco: anémona:</u> Disco: altura			
	very short	très basse	sehr niedrig	muy baja			1
	very short to short	très basse à basse	sehr niedrig bis niedrig	muy baja a baja			2
	short	basse	niedrig	baja	Meringue		3
	short to medium	basse à moyenne	niedrig bis mittel	baja a media			4
	medium	moyenne	mittel	media			5
	medium to tall	moyenne à haute	mittel bis hoch	media a elevada	Secret Glow		6
	tall	haute	hoch	elevada	Catharina		7
	tall to very tall	haute à très haute	hoch bis sehr hoch	elevada a muy elevada			8
	very tall	très haute	sehr hoch	muy elevada	Noectwo		9
41. (*)	QN	MS/VG	(+)	(b)			
	<u>Only varieties with disc type: daisy:</u> Disc: ratio height/diameter	<u>Seulement les variétés avec disque de type : marguerite:</u> Disque : rapport hauteur/diamètre	<u>Nur Sorten mit Scheiben vom Typ: margeritenförmig:</u> Scheibe: Verhältnis Höhe/Durchmesser	<u>Solo variedades con tipo de disco: margarita:</u> Disco: relación entre altura y diámetro			
	very low	très bas	sehr klein	muy baja			1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja			2
	low	bas	klein	baja	Green Jewel		3
	low to medium	bas à moyen	klein bis mittel	baja a media			4
	medium	moyen	mittel	media	Purity		5
	medium to high	moyen à élevé	mittel bis groß	media a alta			6
	high	élevé	groß	alta	Tiki Torch		7
	high to very high	élevé à très élevé	groß bis sehr groß	alta a muy alta			8
	very high	très élevé	sehr groß	muy alta			9

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
42. (*)	QN MS/VG	(b)				
	<u>Only varieties with disc type: anemone:</u> Disc: ratio height/diameter	<u>Seulement les variétés avec disque de type : anémone:</u> Disque : rapport hauteur/diamètre	<u>Nur Sorten mit Scheiben vom Typ: anemonenförmig:</u> Scheibe: Verhältnis Höhe/Durchmesser	<u>Solo variedades con tipo de disco: anémone:</u> Disco: relación entre altura y diámetro		
	very low	très bas	sehr klein	muy baja		1
	very low to low	très bas à bas	sehr klein bis klein	muy baja a baja		2
	low	bas	klein	baja	Meringue	3
	low to medium	bas à moyen	klein bis mittel	baja a media		4
	medium	moyen	mittel	media		5
	medium to high	moyen à élevé	mittel bis groß	media a alta		6
	high	élevé	groß	alta	Hot Papaya	7
	high to very high	élevé à très élevé	groß bis sehr groß	alta a muy alta		8
	very high	très élevé	sehr groß	muy alta		9
43. (*)	QN VG	(+) (b)				
	Disc: diameter in relation to flower head	Disque : diamètre par rapport au capitule	Scheibe: Durchmesser im Verhältnis zum Blütenkopf	Disco: diámetro en relación con el capítulo		
	very small	très petit	sehr klein	muy pequeño		1
	very small to small	très petit à petit	sehr klein bis klein	muy pequeño a pequeño		2
	small	petit	klein	pequeño	Tomato Soup	3
	small to medium	petit à moyen	klein bis mittel	pequeño a medio		4
	medium	moyen	mittel	medio	Green Jewel	5
	medium to large	moyen à grand	mittel bis groß	medio a grande		6
	large	grand	groß	grande	Milkshake	7
	large to very large	grand à très grand	groß bis sehr groß	grande a muy grande		8
	very large	très grand	sehr groß	muy grande		9
44. (*)	PQ VG	(+) (b)				
	Disc: color of tip of paleae (spikes)	Disque : couleur du sommet des épis	Scheibe: Farbe der Spitze der Paleae (Stacheln)	Disco: color de la punta de las páleas (espinas)		
	none	aucune	keine	ausente	Meringue	1
	green	vert	grün	verde		2
	yellowish green	vert jaunâtre	gelblich grün	verde amarillento	Green Jewel	3
	yellow	jaune	gelb	amarillo		4
	orange	orange	orange	naranja	Purity, Mount Hood	5
	red orange	rouge orangé	rotorange	naranja rojizo		6
	red brown	brun-rouge	rotbraun	marrón rojizo	Merlot, Hot Summer	7
	purple brown	brun-pourpre	purpurbraun	marrón púrpura	Fatal Attraction	8

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
45. (*)	PQ	VG	(+)	(b)				
	Disc: second color of paleae (spikes)	Disque : deuxième couleur du sommet des épis	Scheibe: Sekundärfarbe der Paleae (Stacheln)	Disco: color secundario de las páleas (espinas)				
	none	aucune	keine	ausente	Meringue		1	
	green	vert	grün	verde	Purity, Green Jewel		2	
	yellow	jaune	gelb	amarillo	Hot Summer		3	
	orange	orange	orange	naranja	Mount Hood		4	
	red orange	rouge orangé	rotorange	naranja rojizo	Fatal Attraction, Merlot		5	
	red brown	brun-rouge	rotbraun	marrón rojizo			6	
46. (*)	PQ	VG						
	Only varieties with disc type: anemone: Disc: color before disc florets open	Seulement les variétés avec disque de type : anémone: couleur avant l'ouverture des fleurons discaux	Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibe: Farbe vor dem Öffnen der Scheibenblüten	Solo variedades con tipo de disco: anémone: Disco: color antes de la apertura de los flósculos del disco				
	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)				
47. (*)	PQ	VG						
	Only varieties with disc type: anemone: Disc: color after disc florets open	Seulement les variétés avec disque de type : anémone: couleur après l'ouverture des fleurons discaux	Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibe: Farbe nach dem Öffnen der Scheibenblüten	Solo variedades con tipo de disco: anémone: Disco: color después de la apertura de los flósculos del disco				
	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indíquese el número de referencia)				
48. (*)	QL	VG	(+)	(b)				
	Only varieties with disc type: daisy: Disc: presence of ray florets within disc	Seulement les variétés avec disque de type : marguerite: Disque : présence de fleurs ligulées à l'intérieur du disque	Nur Sorten mit Scheiben vom Typ: margeritenförmig: Scheibe: Vorhandensein von Randblüten in der Scheibe	Solo variedades con tipo de disco: margarita: Disco: presencia de flores liguladas en el disco				
	absent	absente	fehlend	ausentes	Merlot		1	
	present	présente	vorhanden	presentes	Mount Hood		9	

	English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
49. (*)	QN MS/VG	(+) (b)				
	<u>Only varieties with disc type: daisy: with ray florets within the disc:</u> Disc: number of ray florets within disc	<u>Seulement les variétés avec disque de type : marguerite : avec des fleurs ligulées à l'intérieur du disque:</u> Disque : nombre de fleurs ligulées à l'intérieur du disque	<u>Nur Sorten mit Scheiben vom Typ: margeritenförmig: mit Randblüten in der Scheibe:</u> Scheibe: Anzahl Randblüten in der Scheibe	<u>Solo variedades con tipo de disco: margarita: con flores liguladas en el disco:</u> Disco: número de flores liguladas en el disco		
	very few	très petit	sehr gering	muy escaso		1
	very few to few	très petit à petit	sehr gering bis gering	muy escaso a escaso		2
	few	petit	gering	escaso	Mount Hood	3
	few to medium	petit à moyen	gering bis mittel	escaso a medio		4
	medium	moyen	mittel	medio	Double Decker	5
	medium to many	moyen à grand	mittel bis groß	medio a elevado		6
	many	grand	groß	elevado	Pink Poodle	7
	many to very many	grand à très grand	groß bis sehr groß	elevado a muy elevado		8
	very many	très grand	sehr groß	muy elevado		9
50. (*)	QN MS/VG					
	<u>Only varieties with disc type: anemone:</u> Disc floret: length	<u>Seulement les variétés avec disque de type : anémone:</u> Fleuron discal : longueur	<u>Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibenblüte: Länge</u>	<u>Solo variedades con tipo de disco: anémone:</u> Flósculo del disco: longitud		
	very short	très courte	sehr kurz	muy corta		1
	short	courte	kurz	corta	Milkshake	2
	medium	moyenne	mittel	media		3
	long	longue	lang	larga	Hot Papaya	4
	very long	très longue	sehr lang	muy larga		5
51.	QN MS/VG	(b)				
	<u>Only varieties with disc type: anemone:</u> Disc floret: width	<u>Seulement les variétés avec disque de type : anémone:</u> Fleuron discal : largeur	<u>Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibenblüte: Breite</u>	<u>Solo variedades con tipo de disco: anémone:</u> Flósculo del disco: anchura		
	very narrow	très étroite	sehr schmal	muy estrecha	Milkshake	1
	narrow	étroite	schmal	estrecha	SWEET271	2
	medium	moyenne	mittel	media		3
	broad	large	breit	ancha	Hot Papaya	4
	very broad	très large	sehr breit	muy ancha		5

	English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
52.	QN	VG	(+)	(b)				
	<u>Only varieties with disc type: anemone:</u> Disc floret: curvature		<u>Seulement les variétés avec disque de type :</u> <u>anémone:</u> Fleuron discal : courbure		<u>Nur Sorten mit Scheiben vom Typ:</u> <u>anemonenförmig:</u> Scheibenblüte: Biegung	<u>Solo variedades con tipo de disco:</u> <u>anémona:</u> Flósculo del disco: curvatura		
	straight		droite		gerade	recta	Milkshake	1
	weakly recurved		faiblement récurvée		leicht zurückgebogen	levemente recurvada	Secret Glow	2
	strongly recurved		fortement récurvée		stark zurückgebogen	muy recurvada	Hot Papaya	3
53. (*)	QN	VG	(+)	(b)				
	<u>Only varieties with disc type: anemone:</u> Disc floret: length of tube		<u>Seulement les variétés avec disque de type :</u> <u>anémone:</u> Fleuron discal : longueur du tube		<u>Nur Sorten mit Scheiben vom Typ:</u> <u>anemonenförmig:</u> Scheibenblüte: Länge der Röhre	<u>Solo variedades con tipo de disco:</u> <u>anémona:</u> Flósculo del disco: longitud tubo		
	very short		très courte		sehr kurz	muy corta		1
	short		courte		kurz	corta	Hot Papaya	2
	medium		moyenne		mittel	media		3
	long		longue		lang	larga	Milkshake	4
	very long		très longue		sehr lang	muy larga		5
54. (*)	QN	VG		(b)				
	<u>Only varieties with disc type: anemone:</u> Disc floret: depth of indentations of tip		<u>Seulement les variétés avec disque de type :</u> <u>anémone:</u> Fleuron discal : profondeur des denticulations du sommet		<u>Nur Sorten mit Scheiben vom Typ:</u> <u>anemonenförmig:</u> Scheibenblüte: Tiefe der Einschnitte der Spitze	<u>Solo variedades con tipo de disco:</u> <u>anémona:</u> Flósculo del disco: profundidad de las indentaciones de la punta		
	absent or very shallow		absente ou très peu profonde		fehlend oder sehr flach	ausente o muy superficial		1
	shallow		peu profonde		flach	superficial		2
	medium		moyenne		mittel	media	SWEET271	3
	deep		profonde		tief	profunda	Hot Papaya	4
	very deep		très profonde		sehr tief	muy profunda	Secret Glow	5

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

All characteristics should be observed at the time of full flowering.

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

- (a) Observations should be made on stem leaves taken from the middle third of the flowering stem, and on the upper surface unless otherwise indicated.
- (b) Observations should be made when half the disc florets in the flower head have dehisced/opened.
- (c) Observations should be made on ray florets of the predominant type.
- (d) The main color is the color with the largest surface area. In cases where the areas of the main and secondary color are too similar to reliably decide which color has the largest area, the darker color is considered to be the main color.

8.2 *Explanations for individual characteristics*

Ad. 2: Plant: height



Ad. 3: Plant: floriferousness

Should be observed as the number of flowers open at the same time on the plant.

Ad. 4: Stem: color

The color should be observed on the middle third of the stem, excluding the peduncle.

Ad. 6: Leaf: length

Observations should be made including the petiole.

Ad. 14: Leaf: indentations of margin



1
absent or very few



2
few



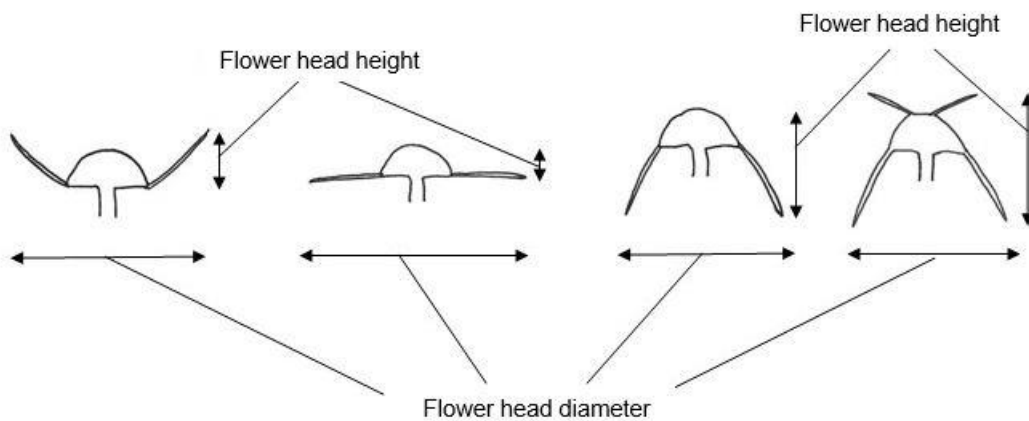
3
medium



4
many

Ad. 17: Flower head: diameter

Observations should be made on the natural flower head diameter and height.



Ad. 18: Flower head: height

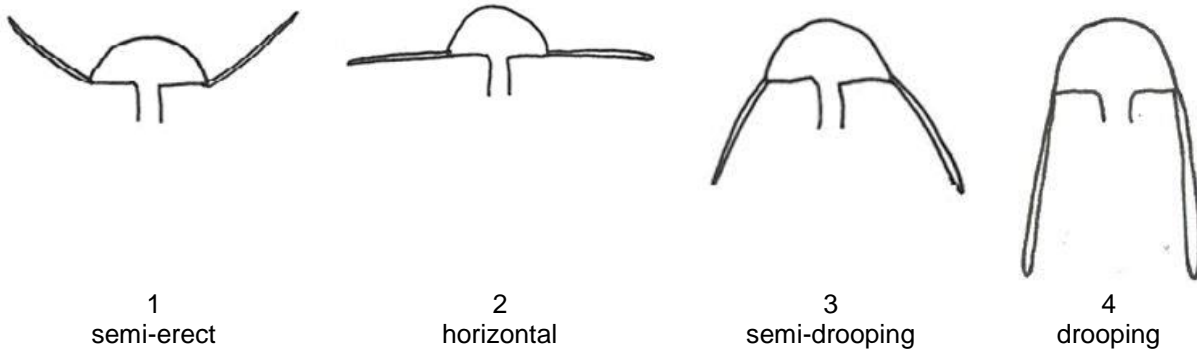
See Ad. 17

Ad. 19: Flower head: number of ray florets

Observations should be made excluding any ray florets within the disc (see characteristic 49).

Ad. 20: Flower head: attitude of ray florets at origin

The origin is the base of the ray floret as it emerges from the involucre.



Ad. 21: Flower head: relative number of ligulate ray florets

“Relative” means the number of ligulate ray florets as a proportion of the overall number of ray florets. It is this which is observed, not the absolute number of ligulate ray florets.

Ligulate florets are flat.



Ad. 22: Flower head: relative number of spatulate ray florets

“Relative” means the number of spatulate ray florets as a proportion of the overall number of ray florets. It is this which is observed, not the absolute number of spatulate ray florets.

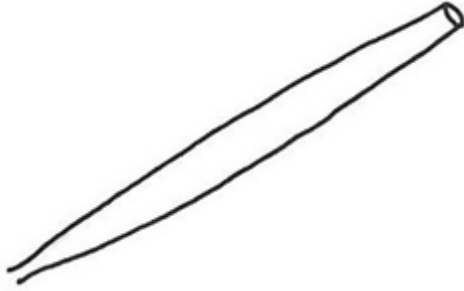
Spatulate ray florets are where part of the floret is tubular and part is flat.



Ad. 23: Flower head: relative number of quilled ray florets

“Relative” means the number of quilled ray florets as a proportion of the overall number of ray florets. It is this which is observed, not the absolute number of quilled ray florets.

Quilled florets are where the whole length of the floret is tubular.



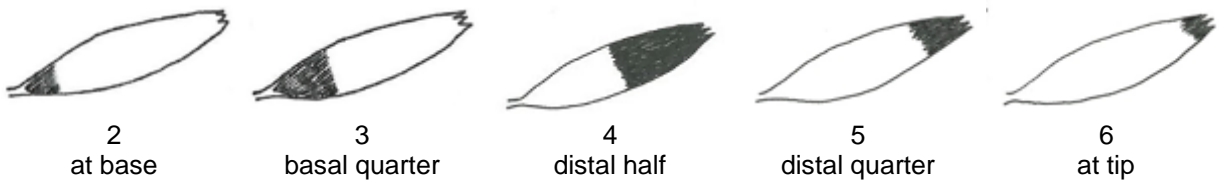
Ad. 27: Only varieties with spatulate or quilled ray florets: Ray floret: color of outer side

Observations should be made on the quilled part of the floret, on the area facing upwards.

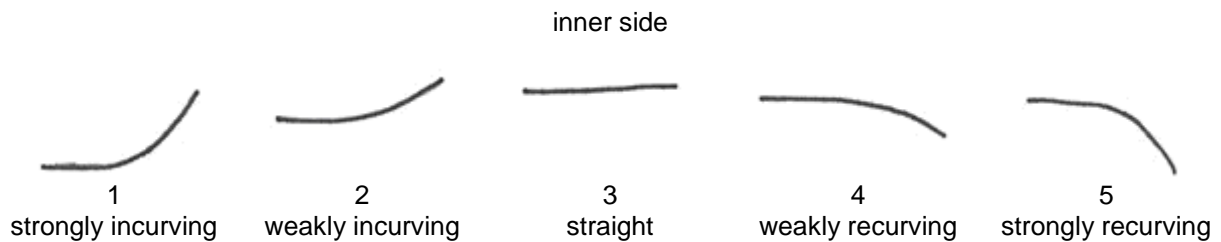


Color to be observed on this part

Ad. 30: Ray floret: distribution of secondary color of inner side

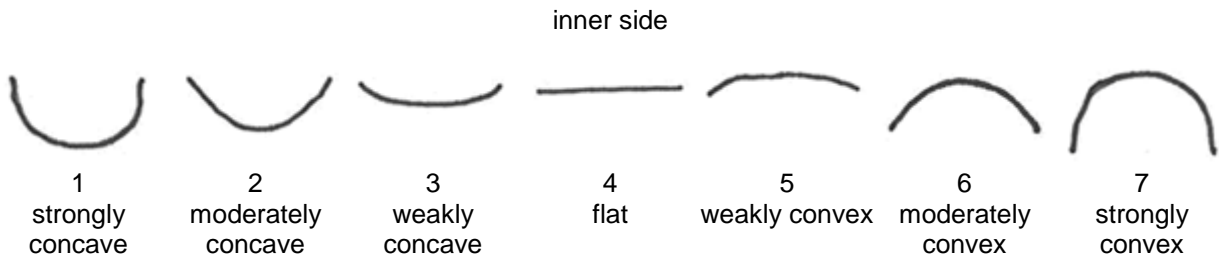


Ad. 31: Ray floret: curvature

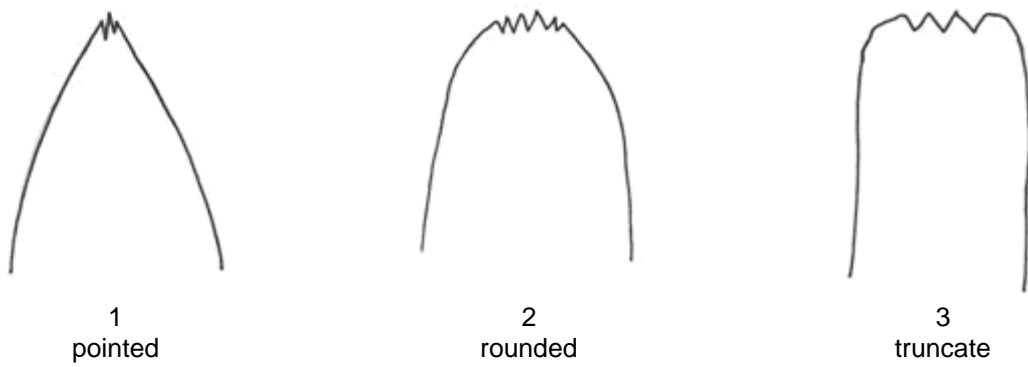


Ad. 33: Ray floret: profile in cross section

Observations should be made at the midpoint of the floret.



Ad. 34: Ray floret: shape of apex



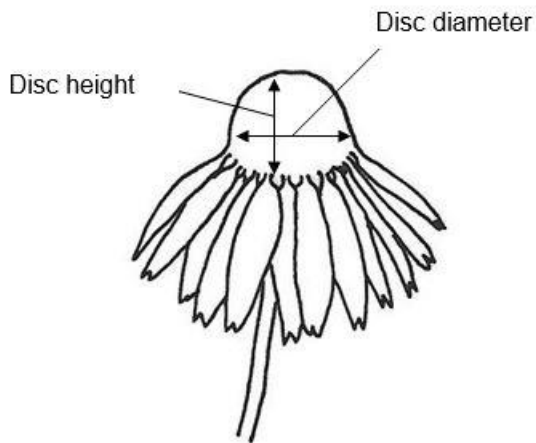
Ad. 35: Ray floret: indentations of tip



Ad. 36: Disc: type



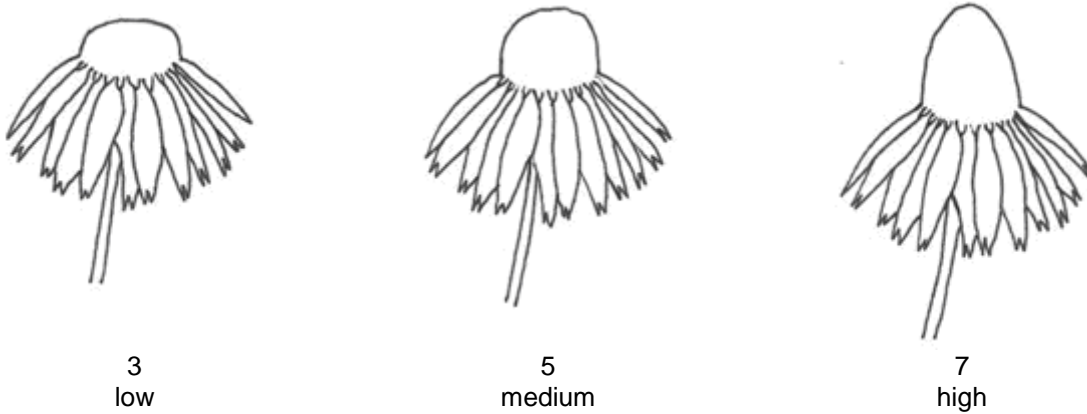
Ad. 37: Only varieties with disc type: daisy: Disc: diameter



Ad. 39: Only varieties with disc type: daisy: Disc: height

See Ad. 37

Ad. 41: Only varieties with disc type: daisy: Disc: ratio height/diameter



Ad. 43: Disc: diameter in relation to flower head

The disc diameter is observed relative to the natural flower head diameter.



3
small



5
medium



7
large

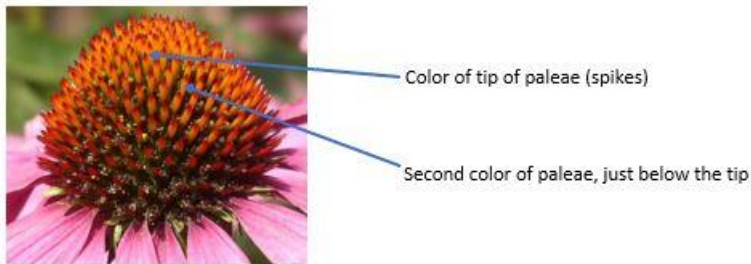
Ad. 44: Disc: color of tip of paleae (spikes)

To be observed on paleae half way between the base and the top of the disc, just before the disc florets associated with the paleae have dehisced/opened.



Correct stage and position in head to observe paleae color

The color of tip of paleae (spikes) (characteristic 44) is observed irrespective of area covered. The second color (characteristic 45) is the color directly below the tip (if different from the tip color). Any further colors should be ignored.



Color of tip of paleae (spikes)

Second color of paleae, just below the tip

In some varieties with anemone disc type (characteristic 36) paleae are not visible in the head, in these varieties both characteristic 44 and 45 should be observed as none, note 1.



Example of variety where paleae are observed as 'none'.

Ad. 45: Disc: second color of paleae (spikes)

See Ad. 44

Ad. 48: Only varieties with disc type: daisy: Disc: presence of ray florets within disc



1
absent



9
present

Ad. 49: Only varieties with disc type: daisy: with ray florets within the disc: Disc: number of ray florets within disc



3
few



7
many

Ad. 52: Only varieties with disc type: anemone: Disc floret: curvature



1
straight



2
weakly recurved



3
strongly recurved

Ad. 53: Only varieties with disc type: anemone: Disc floret: length of tube



2
short



3
medium



4
long

9. Literature

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Bundessortenamt, 2002: *Beschreibende Sortenliste Arznei und Gewürzpflanzen*. DE, pp. 161- 163

Foster, S. 1991: Echinacea. Nature's immune enhancer. Healing Arts Press. Rochester, VT

Köck, O. 2001: Medicinal plant varieties of Hungary: 23

Kozłowski, J. 1996: Jeżówka purpurowa w uprawie. Wiadomości Zielarskie 5: 3-4

McGregor, R. 1968: The taxonomy of the genus Echinacea (Composite). The University of Kansas Science Bulletin. 48 (4): 113-142

Rice, G. (ed)., 2006: Royal Horticultural Society Encyclopedia of Perennials. Dorling Kinsdersley Ltd.. London, GB.

Seidler-Łożykowska, K., Dąbrowska, J. 1996: Evaluation of *Echinacea purpurea* collection. Herba Polonica 3: 155-161

Seidler-Łożykowska, K., Dąbrowska, J. 2003: Yield and polyphenolic acids content in purple coneflower (*Echinacea purpurea* Moench) at different growth stages. Journal of Herbs, Spices & Medicinal Plants 10 (3): 7-12

Seidler-Łożykowska, K., Kaźmierczak, K. 2004: Breeding program on purple coneflower (*Echinacea purpurea* Moench) III. Comparative experiment, Herba Polonica 50 (2): 17-20

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Application date: (not to be filled in by the applicant)
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TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire	
1.1 Botanical name	<input type="text" value="Echinacea Moench"/>
1.2 Common name	<input type="text" value="Echinacea, Cone Flower"/>
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 variety)

(.....) x (.....)

female parent male parent

(b) partially known cross

(please state known parent variety(ies))

(.....) x (.....)

female parent male parent

(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)

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

4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

- (a) Self-pollination []
- (b) Cross-pollination []
- (c) Other (please provide details) []

4.2.2 Vegetative propagation

- (a) Cuttings []
- (b) *In vitro* propagation []
- (c) Division []
- (d) Other (state method) []

4.2.3 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
5.1 Plant: height (2)		
very short	SWEET271	1 []
very short to short		2 []
short	ECHOR273	3 []
short to medium		4 []
medium	Noectwo	5 []
medium to tall		6 []
tall	Razzmatazz	7 []
tall to very tall		8 []
very tall		9 []
5.2 Leaf: variegation (11)		
absent	ECHOR273	1 []
present	Prairie Frost	9 []
5.3(i) Ray floret: main color of inner side (28)		
RHS Colour Chart (indicate reference number)		
5.3(ii) Ray floret: main color of inner side (28)		
green	Green Jewel	1 []
white	Purity	2 []
yellow	Harvest Moon	3 []
orange	Tiki Torch	4 []
red	Tomato Soup	5 []
pink		6 []
purple	Magnus	7 []
other (please indicate)		[]

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
5.4(i) Ray floret: secondary color of inner side (29)		
RHS Colour Chart (indicate reference number)		
5.4(ii) Ray floret: secondary color of inner side (29)		
none		1 []
green		2 []
white		3 []
yellow		4 []
orange		5 []
red		6 []
pink		7 []
purple		8 []
other (please indicate)		[]
5.5 Disc: type (36)		
daisy	Merlot	1 []
anemone	Hot Papaya	2 []
5.6 Disc: color of tip of paleae (spikes) (44)		
none	Meringue	1 []
green		2 []
yellowish green	Green Jewel	3 []
yellow		4 []
orange	Mount Hood, Purity	5 []
red orange		6 []
red brown	Hot Summer, Merlot	7 []
purple brown	Fatal Attraction	8 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
5.7(i) <u>Only varieties with disc type: anemone:</u> Disc: color after disc florets open (47) RHS Colour Chart (indicate reference number)		
5.7(ii) <u>Only varieties with disc type: anemone:</u> Disc: color after disc florets open (47)		
green	Milkshake	1 []
white	Meringue	2 []
yellow	Noectwo	3 []
orange	Hot Papaya	4 []
red		5 []
pink	Razzmatazz	6 []
purple	Catherina	7 []
other (please indicate)		[]
5.8 <u>Only varieties with disc type: daisy:</u> Disc: presence of ray florets within disc (48)		
absent	Merlot	1 []
present	Mount Hood	9 []

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

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

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
<i>Example</i>	<i>Ray floret color</i>	<i>pink</i>	<i>purple</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 Are there any special conditions for growing the variety or conducting the examination?

Yes No

(If yes, please provide details)

7.3 Other information

A representative color photograph of the variety displaying its main distinguishing feature(s), should accompany the Technical Questionnaire. The photograph will provide a visual illustration of the candidate variety which supplements the information provided in the Technical Questionnaire.

The key points to consider when taking a photograph of the candidate variety are:

- Indication of the date and geographic location
- Correct labeling (breeder's reference)
- Good quality printed photograph (minimum 10 cm x 15 cm) and/or sufficient resolution electronic format version (minimum 960 x 1280 pixels)"

Further guidance on providing photographs with the Technical Questionnaire is available in document TGP/7 "Development of Test Guidelines", Guidance Note 35 (<http://www.upov.int/tgp/en/>).

[The link provided may be deleted by members of the Union when developing authorities' own test guidelines.]

Main use of the variety

(a) garden plant

(b) cut flower

(c) herbal/pharmaceutical

(d) other (please provide details)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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8. Authorization for release

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

Yes [] No []

(b) Has such authorization been obtained?

Yes [] No []

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

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

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

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

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

Please provide details for where you have indicated "yes".

.....

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

Applicant's name

Signature Date

[End of document]