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UPOV

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

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ECHINACEA

UPOV Code: ECNCE

Echinacea Moench.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from the United Kingdom and Poland

to be considered by the

Technical Committee at its forty-eighth session,
to be held in Geneva from March 26 to 28, 2012

Alternative Names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Echinacea Moench.	Echinacea, Cone Flower	Echinacée	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

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

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 Observation of color by eye

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 Vegetatively propagated varieties: each test should be designed to result in a total of at least 10 plants.

3.4.2 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 two 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 / Parts of Plants to be Examined

4.1.4.1 Unless otherwise indicated, for vegetatively propagated varieties, 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 observations made on all plants in the test, disregarding any off-type plants.

4.1.4.2 Unless otherwise indicated, for seed-propagated varieties, 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 observations made on all plants in the test, disregarding any off-type plants.

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 second column of 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 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.

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

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) Leaf: variegation (Characteristic 12)
(b) Ray floret: main color of inner side (Characteristic 31) 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

(c) Disc: type (Characteristic 39)
(d) Only varieties with disc type: daisy: Disc: color of paleae (spikes) (Characteristic 47)
(e) Only varieties with disc type: anemone: Disc: color after disc florets open (Characteristic 50) 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

(f) Only varieties with disc type: daisy: Disc: presence of ray florets within the disc (Characteristic 51)

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 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	Note
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

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

(*) 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 4.1.5

(a)-(d) 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
1.	**VG**	**Plant: growth habit**	**Plante : port**	**Pflanze: Wuchsform**	**Planta: porte**		
QN		upright	dressé	aufrecht	erecto	Mount Hood	1
		semi upright	demi-dressé	halbaufrecht	semierecto	Green Jewel, Ida	2
		semi spreading	demi-étalé	halbbreitwüchsig	semirastrero	Mistral	3
		spreading	étalé	breitwüchsig	rastrero		4
2. (*) (+)	**VG/ MG**	**Plant: height**	**Plante : hauteur**	**Pflanze: Höhe**	**Planta: altura**		
QN		short	courte	niedrig	baja	Mistral	3
		medium	moyenne	mittel	media	Green Jewel	5
		tall	haute	hoch	alta	Mount Hood	7
3. (+)	**VG**	**Plant: floriferousness**	**Plante : floribondité**	**Pflanze: Blütenreichhaltig-keit**	**Planta: capacidad florífera**		
QN		weak	faible	gering	baja	Tiki Torch	3
		medium	moyenne	mittel	media	Green Jewel	5
		strong	élevée	groß	alta	Mistral	7
4.	**VG**	**Plant: density**	**Plante : densité**	**Pflanze: Dichte**	**Planta: densidad**		
(+)							
QN		sparse	faible	locker	laxa	Hot Summer	3
		medium	moyenne	mittel	media	Mount Hood	5
		dense	dense	dicht	densa	Mistral	7
5.	**VG**	**Stem: color**	**Tige : couleur**	**Trieb: Farbe**	**Tallo: color**		
PQ	**(a)**	green	vert	grün	verde	Green Jewel	1
		green tinged slightly purple	vert légèrement teinté de pourpre	grün leicht meliert mit purpurn	verde levemente teñido de púrpura	Catharina	2
		green tinged heavily 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
6.	**VG**	**Stem: number of leaves**	**Tige : nombre de feuilles**	**Trieb: Anzahl der Blätter**	**Tallo: número de hojas**		
QN		few	petit	gering	bajo		3
		medium	moyen	mittel	medio	Green Jewel	5
		many	grand	groß	alto	Ida, Mistral	7
7. (*)	**VG/ MS**	**Leaf: length (including petiole)**	**Feuille : longueur (y compris le pétiole)**	**Blatt: Länge (einschl. Blattstiel)**	**Hoja: longitud (incluido el pecíolo)**		
QN	**(b)**	short	courte	kurz	corta	Mistral	3
		medium	moyenne	mittel	media	Merlot	5
		long	longue	lang	larga	Green Jewel	7
8. (*)	**VG/ MS**	**Leaf: width**	**Feuille : largeur**	**Blatt: Breite**	**Hoja: anchura**		
QN	**(b)**	narrow	étroite	schmal	estrecha	Purity	3
		medium	moyenne	mittel	media	Green Jewel	5
		broad	large	breit	ancha	Catharina	7
9. (*)	**VG/ MS**	**Leaf : length/width ratio**	**Feuille : rapport longueur/largeur**	**Blatt: Verhältnis Länge/Breite**	**Hoja: relación entre la longitud y la altura**		
QN	**(b)**	slightly elongated	légèrement allongée	leicht langgezogen	ligeramente elongada	Merlot	3
		moderately elongated	modérément allongée	mäßig langgezogen	moderadamente elongada	Polar Breeze	5
		strongly elongated	fortement allongée	stark langgezogen	muy elongada		7
10.	**VG**	**Leaf: position of broadest part**	**Feuille : position de la partie la plus large**	**Blatt: Position der breitesten Stelle**	**Hoja: posición del diámetro máximo**		
QN	**(b)**	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	leicht zur Basis hin	moderadamente hacia la base	Tomato Soup	2
		strongly towards base	fortement vers la base	stark zur Basis hin	marcadamente hacia la base	Milkshake	3

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
11.	**VG**	**Leaf: intensity of green color**	**Feuille : intensité de la couleur verte**	**Blatt: Intensität der Grünfärbung**	**Hoja: intesidad del color verde**		
QN	**(b)**	light	claire	hell	claro	Tomato Soup	1
		medium	moyenne	mittel	medio	Purity	2
		dark	foncée	dunkel	oscuro	Fatal Attraction	3
12. (*)	**VG**	**Leaf: variegation**	**Feuille : panachure**	**Blatt: Panaschierung**	**Hoja: variegación**		
QL	**(b)**	absent	absente	fehlend	ausente	Tomato Soup	1
		present	présente	vorhanden	presente	Prairie Frost	9
13. (*)	**VG**	**Leaf: color of variegation**	**Feuille : couleur de la panachure**	**Blatt: Farbe der Panaschierung**	**Hoja: color de la variegación**		
PQ	**(b)**	white	blanc	weiß	blanco		1
		yellowish white	blanc jaunâtre	gelblich weiß	blanco amarillento	Prairie Frost	2
		yellow	jaune	gelb	amarillo		3
		yellow green	vert jaune	gelbgrün	verde amarillento		4
14. (*)	**VG**	**Leaf: distribution of variegation**	**Feuille : répartition de la panachure**	**Blatt: Verteilung der Panaschierung**	**Hoja: distribución de la variegación**		
PQ	**(b)**	marginal	marginale	am Rand	marginal	Prairie Frost	1
		central zone	zone centrale	in der Mitte	zona central		2
		irregular	irrégulière	unregelmäßig	irregular	Sparkler	3
15. (*)	**VG**	**Leaf: rugosity**	**Feuille : rugosité**	**Blatt: Rauheit**	**Hoja: rugosidad**		
QN	**(b)**	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Hot Papaya	1
		weak	faible	gering	débil	Summer Cocktail	3
		medium	moyenne	mittel	media	Green Jewel	5
		strong	forte	stark	fuerte	Catharina	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
16.	**VG**	**Leaf: glossiness**	**Feuille : brillance**	**Blatt: Glanz**	**Hoja: brillo**		
QN	**(b)**	absent or very weak	absente ou très faible	fehlend oder sehr gering	ausente o muy débil	Mistral, Lilliput	1
		weak	faible	gering	débil	After Midnight	2
		medium	moyenne	mittel	medio		3
		strong	forte	stark	fuerte	Pineapple Sundae	4
17. (*) (+)	**VG**	**Leaf: indentations of margin**	**Feuille : denticulations du bord**	**Blatt: Randeinschnitte**	**Hoja: indentaciones del borde**		
QN	**(b)**	absent or very few	absentes ou très rares	fehlend oder sehr wenige	ausente o muy pocos	Hot Papaya	1
		few	rares	wenige	pocos	Catharina	2
		medium	assez nombreuses	mittel	medio	Green Jewel	3
		many	nombreuses	viele	muchos	Avalanche	4
18. (*)	**VG**	**Peduncle: color**	**Pédoncule : couleur**	**Stiel: Farbe**	**Pedúnculo: color**		
PQ		green	vert	grün	verde	Green Jewel	**1**
		green tinged slightly purple	vert légèrement teinté de pourpre	grün leicht meliert mit purpurn	verde levemente teñido de púrpura	Tomato Soup	**2**
		green tinged heavily purple	vert fortement teinté de pourpre	grün stark meliert mit purpurn	verde fuertemente teñido de púrpura		**3**
		purple	pourpre	purpurn	púrpura	After Midnight	**4**
19. (*)	**VG**	**Peduncle: pubesence**	**Pédoncule : pubescence**	**Stiel: Behaarung**	**Pedúnculo: pubescencia**		
QN		absent or very sparse	absente ou très faible	fehlend oder sehr gering	ausente o muy laxa		1
		sparse	faible	gering	laxa	Hot Papaya	2
		medium	moyenne	mittel	media	Tomato Soup	3
		dense	dense	stark	densa	Green Jewel	4
		very dense	très dense	sehr stark	muy densa	Mistral	5

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
20. (*) (+)	**VG/ MS**	**Flower head: diameter**	**Capitule : diamètre**	**Blütenkopf: Durchmesser**	**Capítulo: diámetro**		
QN	**(c)**	small	petit	klein	pequeño	Kim's Mop Head	3
		medium	moyen	mittel	medio	Green Jewel	5
		large	grand	groß	ancho	Merlot	7
21. (*) (+)	**VG/ MS**	**Flower head: height**	**Capitule : hauteur**	**Blütenkopf: Höhe**	**Capítulo: altura**		
QN	**(c)**	low	bas	niedrig	pequeño		3
		medium	moyen	mittel	medio	Mistral	5
		high	haut	hoch	alto	Hot Papaya	7
22. (*) (+)	**VG/ MS**	**Flower head: number of ray florets**	**Capitule : nombre de fleurs ligulées**	**Blütenkopf: Anzahl der Zungenblüten**	**Capítulo: número de flores liguladas**		
QN	**(c)**	few	petit	gering	escaso	Tiki Torch	3
		medium	moyen	mittel	medio	Mistral	5
		many	élevé	groß	elevado	Fatal Attraction	7
23. (*) (+)	**VG**	**Flower head: attitude of ray florets at origin**	**Capitule : port des fleurs ligulées à l'origine**	**Blütenkopf: ursprüngliche Stellung der Zungenblüten**	**Capítulo: porte de flores liguladas en la base**		
QN	**(c)**	semi-erect	demi-dressé	halbaufrecht	semierecto	Lilliput	1
		horizontal	horizontal	horizontal	horizontal	Merlot	2
		semi-drooping	demi-retombant	halbhängend	semicolgante	Mount Hood	3
		drooping	retombant	hängend	colgante	Hot Papaya	4

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
24. (*) (+)	**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**		
QN	**(c)**	none	aucun	keine	ninguno	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
25. (*) (+)	**VG**	**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**		
QN	**(c)**	none	aucun	keine	ninguno		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
26. (*) (+)	**VG**	**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**		
QN	**(c)**	none	aucun	keine	ninguno		1
		few	petit	gering	escaso	Sundown	2
		medium	moyen	mittel	medio		3
		many	grand	große	elevado	All that Jazz	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
27. (*)	**VG/ MS**	**Ray floret: length**	**Fleur ligulée : longueur**	**Zungenblüte: Länge**	**Flor ligulada: longitud**		
QN	**(c)**	short	courte	kurz	corta	Fatal Attraction	3
	(d)	medium	moyenne	mittel	media	Merlot	5
		long	longue	lang	larga	Tomato Soup	7
28. (*)	**VG/ MS**	**Ray floret: width**	**Fleur ligulée : largeur**	**Zungenblüte: Breite**	**Flor ligulada: anchura**		
QN	**(c)**	narrow	étroite	schmal	estrecha	Fatal Attraction	3
	(d)	medium	moyenne	mittel	media	Summer Cocktail	5
		broad	large	breit	ancha	Milkshake	7
29. (*)	**VG/ MS**	**Ray floret: length/width ratio**	**Fleur ligulée : rapport longueur/largeur**	**Zungenblüte: Verhältnis Länge/Breite**	**Flor ligulada: relación entre la longitud y la altura**		
QN	**(c)**	low	faible	klein	baja	Meditation	3
	(d)	medium	moyen	mittel	media	Razzmatazz	5
		high	élevé	groß	elevada	Mount Hood	7
30. (*) (+)	**VG**	**Only varieties with spatulate or quilled ray florets: Ray floret: color of outer side**	**Variétés avec fleurs ligulées spatulées ou tubulées seulement : Fleur ligulée : couleur de la face externe**	**Nur Sorten mit spatel- oder röhrenförmigen Zungenblüten: Zungenblüte: Farbe der Außenseite**	**Sólo variedades con flores liguladas espatuladas o enrolladas: Flor ligulada: color de la cara externa**		
PQ	**(c)** **(d)**	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indicar número de referencia)		
31. (*)	**VG**	**Ray floret: main color of inner side**	**Fleur ligulée : couleur principale de la face interne**	**Zungenblüte: Hauptfarbe der Innenseite**	**Flor ligulada: color principal de la cara interna**		
PQ	**(c)** **(d)**	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indicar número de referencia)		

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
32. (*)	**VG**	**Ray floret: secondary color of inner side**	**Fleur ligulée : couleur secondaire de la face interne**	**Zungenblüte: Sekundärfarbe der Innenseite**	**Flor ligulada: color secundario de la cara interna**		
PQ	**(c)**	RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indicar número de referencia)		
	(d)						
33. (*) (+)	**VG**	**Ray floret: distribution of secondary color of inner side**	**Fleur ligulée : distribution de la couleur secondaire de la face interne**	**Zungenblüte: Verteilung der Sekundärfarbe der Innenseite**	**Flor ligulada: distribución del color secundario de la cara interna**		
PQ	**(c)**	at the base	à la base	an der Basis	en la base		1
	(d)	in the basal quarter	dans le quart basal	im basalen Viertel	en el cuarto basal	Green Envy	2
		in the basal half	dans la moitié basale	in der basalen Hälfte	en la mitad basal	Summer Cocktail	3
34. (+)	**VG**	**Ray floret: curvature**	**Fleur ligulée : courbure**	**Zungenblüte: Biegung**	**Flor ligulada: curvatura**		
QN	**(c)**	strongly incurving	fortement incurvée	stark aufgebogen	muy incurvada		1
	(d)	weakly incurving	faiblement incurvée	schwach aufgebogen	levemente incurvada	Green Jewel	2
		straight	droite	gerade	recta	Mount Hood	3
		weakly reflexing	faiblement récurvée	schwach nach unten gebogen	levemente recurvada	Lilliput	4
		strongly reflexing	fortement récurvée	stark nach unten gebogen	muy recurvada	Hot Papaya	5
35. (*)	**VG**	**Ray floret: twisting**	**Fleur ligulée : torsion**	**Zungenblüte: Drehung**	**Flor ligulada: torsión**		
QN	**(c)**	absent or very weak	absente ou très faible	fehlend oder sehr schwach	ausente o muy débil	Merlot	1
	(d)	weak	faible	schwach	débil	Hot Papaya	2
		moderate	modérée	mittel	moderada		3
		strong	forte	stark	fuerte		4

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
36. **(+)**	**VG**	**Ray floret: profile in cross section**	**Fleur ligulée : profil en section transversale**	**Zungenblüte: Profil im Querschnitt**	**Flor ligulada: perfil en sección transversal**		
QN	**(c)**	strongly concave	fortement concave	stark konkav	fuertemente cóncava	Vintage Wine	1
	(d)	moderately concave	moyennement concave	mäßig konkav	moderadamente cóncava	Green Jewel	2
		weakly concave	faiblement concave	schwach konkav	levemente cóncava	Merlot	3
		flat	plate	flach	plana	Tomato Soup	4
		weakly convex	faiblement convexe	schwach konvex	levemente convexa		5
		moderately convex	moyennement convexe	mäßig konvex	moderadamente convexa		6
		strongly convex	fortement convexe	stark konvex	fuertemente convexa		7
37. **(*)** **(+)**	**VG**	**Ray floret: shape of apex**	**Fleur ligulée : forme du sommet**	**Zungenblüte: Form der Spitze**	**Flor ligulada: forma del ápice**		
PQ	**(c)**	pointed	pointu	spitz	agudo	Purity	1
	(d)	rounded	arrondi	abgerundet	redondeado	Tiki Torch	2
		truncate	tronqué	gerade	truncado	Green Jewel	3
38. **(*)** **(+)**	**VG**	**Ray floret: indentations of tip**	**Fleur ligulée : denticulations du sommet**	**Zungenblüte: Einschnitte der Spitze**	**Flor ligulada: indentaciones de la punta**		
QN	**(c)**	absent or very shallow	absentes ou très peu profondes	fehlend oder sehr flach	ausentes o muy superficiales		1
	(d)	shallow	peu profondes	flach	superficiales	Hot Summer	2
		medium	moyennes	mittel	medias	Green Jewel	3
		deep	profondes	tief	profundas		4
39. **(*)** **(+)**	**VG**	**Disc: type**	**Disque : type**	**Scheibe: Typ**	**Disco: tipo**		
QL	**(c)**	daisy	marguerite	margeritenförmig	margarita	Merlot	1
		anemone	anémone	anemonenförmig	anémona	Hot Papaya	2

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
40. (*) (+)	**VG/ MS**	**Only varieties with disc type: daisy: Disc: diameter**	**Variétés avec type de disque seulement : marguerite : Disque : diamètre**	**Nur Sorten mit Scheiben vom Typ: margeritenförmig: Scheibe: Durchmesser**	**Sólo variedades con tipo de disco: margarita: Disco: diámetro**		
QN	**(c)**	small	petit	klein	pequeño	Tomato Soup	3
		medium	moyen	mittel	medio	Summer Cocktail	5
		large	grand	groß	ancho	Merlot	7
41. (*)	**VG/ MS**	**Only varieties with disc type: anemone: Disc: diameter**	**Variétés avec type de disque seulement : anémone : Disque : diamètre**	**Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibe: Durchmesser**	**Sólo variedades con tipo de disco: anémona: Disco: diámetro**		
QN	**(c)**	small	petit	klein	pequeño	Pink Double Delight	3
		medium	moyen	mittel	medio	Razzmatazz	5
		large	grand	groß	ancho	Hot Papaya	7
42. (*) (+)	**VG/ MS**	**Only varieties with disc type: daisy: Disc: height**	**Variétés avec type de disque seulement : marguerite : Disque : hauteur**	**Nur Sorten mit Scheiben vom Typ: margeritenförmig: Scheibe: Höhe**	**Sólo variedades con tipo de disco: margarita: Disco: altura**		
QN	**(c)**	low	basse	niedrig	bajo	Fatal Attraction	3
		medium	moyenne	mittel	medio	Purity	5
		high	élevée	hoch	alto	After Midnight	7
43. (*)	**VG/ MS**	**Only varieties with disc type: anemone: Disc: height**	**Variétés avec type de disque seulement : anémone : Disque : hauteur**	**Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibe: Höhe**	**Sólo variedades con tipo de disco: anémona: Disco: altura**		
QN	**(c)**	low	basse	niedrig	bajo	Meringue	3
		medium	moyenne	mittel	medio		5
		high	élevée	hoch	alto	Catharina	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
44. (*) (+)	**VG/ MS**	**Only varieties with disc type: daisy: Disc: ratio height/diameter**	**Variétés avec type de disque seulement : marguerite : Disque : rapport hauteur/diamètre**	**Nur Sorten mit Scheiben vom Typ: margeritenförmig: Scheibe: Verhältnis Höhe/Durch-messer**	**Sólo variedades con tipo de disco: margarita: Disco: relación entre altura y diámetro**		
QN	**(c)**	low	petit	klein	baja	Green Jewel	3
		medium	moyen	mittel	media	Purity	5
		high	élevé	groß	elevada	Tiki Torch	7
45. (*)	**VG/ MS**	**Only varieties with disc type: anemone Disc: ratio height/diameter**	**Variétés avec type de disque seulement : anémone : Disque : rapport hauteur/diamètre**	**Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibe: Verhältnis Höhe/Durch-messer**	**Sólo variedades con tipo de disco: anémona: Disco: relación entre altura y diámetro**		
QN	**(c)**	low	petit	klein	baja	Meringue	3
		medium	moyen	mittel	media		5
		high	élevé	groß	elevada	Hot Papaya	7
46. (*) (+)	**VG**	**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**		
QN	**(c)**	small	petit	klein	pequeño	Tomato Soup	3
		medium	moyen	mittel	medio	Green Jewel	5
		large	grand	groß	grande	Milkshake	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
47. (*) (+)	**VG**	**Only varieties with disc type: daisy: Disc: color of paleae (spikes)**	**Variétés avec type de disque seulement : marguerite : Disque : couleur des épis**	**Nur Sorten mit Scheiben vom Typ: margeritenförmig: Scheibe: Farbe der Paleae (Stacheln)**	**Sólo variedades con tipo de disco: margarita: Disco: color de las espigas**		
PQ	**(c)**	green	vert	grün	verde		1
		yellowish green	vert jaunâtre	gelblich grün	verde amarillento	Green Jewel	2
		yellow	jaune	gelb	amarillo		3
		orange	orange	orange	naranja	Purity, Mount Hood	4
		red orange	orange rouge	rotorange	naranja rojizo		5
		red brown	rouge brun	rotbraun	marrón rojizo	Merlot, Hot Summer	6
		purple brown	brun pourpre	purpurbraun	marrón púrpura	Fatal Attraction	7
48. (*) (+)	**VG**	**Only varieties with disc type: daisy: Disc: second color of paleae (spikes)**	**Variétés avec type de disque seulement : marguerite : Disque : deuxième couleur des épis**	**Nur Sorten mit Scheiben vom Typ: margeritenförmig: Scheibe: Sekundärfarbe der Paleae (Stacheln)**	**Sólo variedades con tipo de disco: margarita: Disco: color secundario de las espigas**		
PQ	**(c)**	green	vert	grün	verde	Purity, Green Jewel	1
		yellow	jaune	gelb	amarillo	Hot Summer	2
		orange	orange	orange	naranja	Mount Hood	3
		red orange	orange rouge	rotorange	naranja rojizo	Merlot, Fatal Attraction	4
		red brown	rouge brun	rotbraun	marrón rojizo		5
49. (*)	**VG**	**Only varieties with disc type: anemone: Disc: color before disc florets open**	**Variétés avec type de disque seulement : anémone : Disque : couleur avant l'ouverture des fleurons discaux**	**Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibe: Farbe vor dem Öffnen der Scheibenblüten**	**Sólo variedades con tipo de disco: anémona: Disco: color antes de la apertura de los flósculos del disco**		
PQ		RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indicar número de referencia)		

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
50. (*)	**VG**	**Only varieties with disc type: anemone: Disc: color after disc florets open**	**Variétés avec type de disque seulement : anémone : Disque : couleur après l'ouverture des fleurons discaux**	**Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibe: Farbe nach dem Öffnen der Scheibenblüten**	**Sólo variedades con tipo de disco: anémona: Disco: color después de la apertura de los flósculos del disco**		
PQ		RHS Colour Chart (indicate reference number)	Code RHS des couleurs (indiquer le numéro de référence)	RHS-Farbkarte (Nummer angeben)	Carta de colores RHS (indicar número de referencia)		
51. (*) (+)	**VG**	**Only varieties with disc type: daisy: Disc: presence of ray florets within the disc**	**Variétés avec type de disque seulement : marguerite : Disque :présence de fleurs ligulées à l'intérieur du disque**	**Nur Sorten mit Scheiben vom Typ: margeritenförmig: Scheibe: Vorhandensein von Zungenblüten in der Scheibe**	**Sólo variedades con tipo de disco: margarita: Disco: presencia de flores liguladas en el disco**		
QL	**(c)**	absent	absente	fehlend	ausentes	Merlot	1
		present	présente	vorhanden	presentes	Mount Hood	9
52. (*) (+)	**VG**	**Only varieties with disc type: daisy: with ray florets within the disc: Disc: number of ray florets within the disc**	**Variétés avec type de disque seulement : marguerite : avec des fleurs ligulées à l'intérieur du disque : Disque : nombre de fleurs ligulées à l'intérieur du disque**	**Nur Sorten mit Scheiben vom Typ: margeritenförmig: mit Zungenblüten in der Scheibe: Scheibe: Anzahl Zungenblüten in der Scheibe**	**Sólo variedades con tipo de disco: margarita: con flores liguladas en el disco: Disco: número de flores liguladas en el disco**		
QN	**(c)**	few	petit	gering	escaso	Mount Hood	3
		medium	moyen	mittel	medio	Double Decker	5
		many	grand	groß	elevado	Pink Poodle	7
53. (*)	**VG/ MS**	**Only varieties with disc type: anemone: Disc floret: length**	**Variétés avec type de disque seulement : anémone : Fleuron discal : longueur**	**Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibenblüte: Länge**	**Sólo variedades con tipo de disco: anémona: Flósculo del disco: longitud**		
QN	**(c)**	short	court	kurz	corto	Milkshake	3
		medium	moyen	mittel	medio		5
		long	long	lang	largo	Hot Papaya	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
54.	**VG/ MS**	**Only varieties with disc type: anemone: Disc floret: width**	**Variétés avec type de disque seulement : anémone : Fleuron discal : largeur**	**Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibenblüte: Breite**	**Sólo variedades con tipo de disco: anémona: Flósculo del disco: anchura**		
QN	**(c)**	very narrow	très étroit	sehr schmal	muy estrecho	Milkshake	1
		narrow	étroit	schmal	estrecho		2
		medium	moyen	mittel	medio	Pink Sorbet	3
		broad	large	breit	ancho	Hot Papaya	4
		very broad	très large	sehr breit	muy ancho		5
55. **(+)**	**VG**	**Only varieties with disc type: anemone: Disc floret: curvature**	**Variétés avec type de disque seulement : anémone : Fleuron discal : courbure**	**Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibenblüte: Biegung**	**Sólo variedades con tipo de disco: anémona: Flósculo del disco: curvatura**		
QN	**(c)**	straight	droit	gerade	recto	Milkshake	1
		weakly reflexed	légèrement réfléchi	schwach gebogen	levemente reflexo	Pink Sorbet	2
		strongly reflexed	fortement réfléchi	stark gebogen	muy reflexo	Hot Papaya	3
56. **(*)** **(+)**	**VG**	**Only varieties with disc type: anemone: Disc floret: length of tube**	**Variétés avec type de disque seulement : anémone : Fleuron discal : longueur du tube**	**Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibenblüte: Länge der Röhre**	**Sólo variedades con tipo de disco: anémona: Flósculo del disco: longitud del tubo**		
QN	**(c)**	short	court	kurz	corto	Hot Papaya	3
		medium	moyen	mittel	medio		5
		long	long	lang	largo	Milkshake	7

		English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
57. (*)	**VG**	**Only varieties with disc type: anemone: Disc floret: depth of indentations of tip**	**Variétés avec type de disque seulement : anémone : Fleuron discal : profondeur des denticulations du sommet**	**Nur Sorten mit Scheiben vom Typ: anemonenförmig: Scheibenblüte: Tiefe der Einschnitte der Spitze:**	**Sólo variedades con tipo de disco: anémona: Flósculo del disco: profundidad de las indentaciones de la punta**		
QN	**(c)**	absent or very shallow	absente ou très peu profonde	fehlend oder sehr flach	ausentes o muy superficiales		1
		shallow	peu profonde	flach	superficiales		2
		medium	moyenne	mittel	medias	Pink Sorbet	3
		deep	profonde	tief	profundas	Hot Papaya	4

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

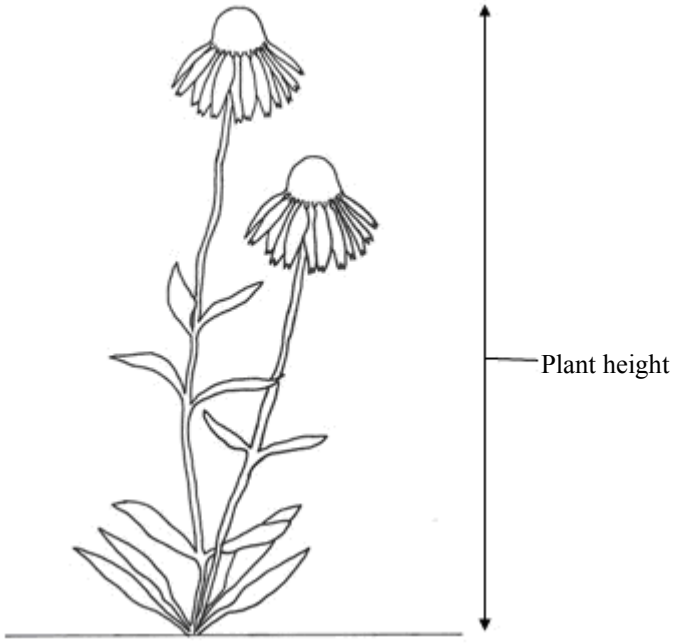
Unless otherwise indicated, all characteristics should be examined at the time of full flowering.

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

(a) Stem characteristics are recorded on the middle third of the stem, excluding the peduncle
(b) Leaf characteristics are recorded on typical stem leaves taken from the middle third of the flowering stem, and are recorded looking at the upper surface unless otherwise indicated.
(c) Unless otherwise indicated, all flower head, ray floret and disc characters to be recorded when half the disc florets in the head have dehisced/opened.
(d) All ray floret characteristics should be observed on the most typical ray florets of the predominant type.

8.2 Explanations for individual characteristics

Ad. 2: Plant: height



Ad. 3: Plant: floriferousness

The number of flowers should be observed as the number of flowers open at the same time on the plant, at the time of full flowering

3
weak

5
medium

7
strong

Ad. 4: Plant: density

The plant density is observed as the overall impression, based on stems, leaves and flowers

3
sparse

5
medium

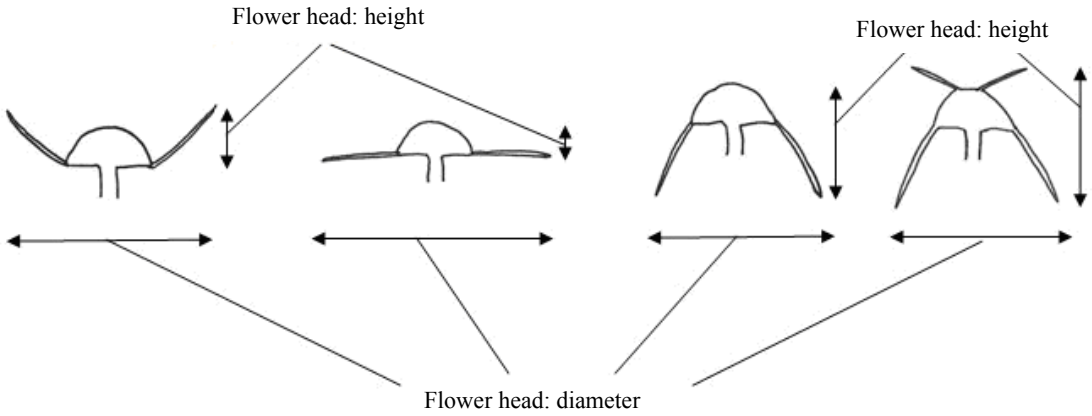
7
dense

Ad. 17: Leaf: indentations of margin

1	2	3	4
absent or very few	few	medium	many

Ad. 20: Flower head: diameter
Ad. 21: Flower head: height

It is the natural flower head diameter and height which is recorded.



Ad. 22: Flower head: number of ray florets

This excludes any ray florets within the disc (see characteristic 51)

Ad. 23: Flower head: attitude of ray florets at origin

1
semi-erect

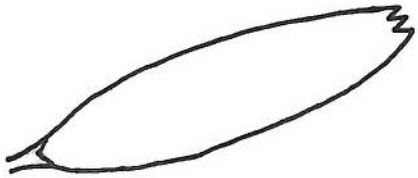
2
horizontal

3
semi-drooping

Ad. 24: Flower head: relative number of ligulate ray florets

"Relative" means the number of ligulate ray florets relative to the overall number of ray florets. It is this which is assessed, not the absolute number of ligulate ray florets.

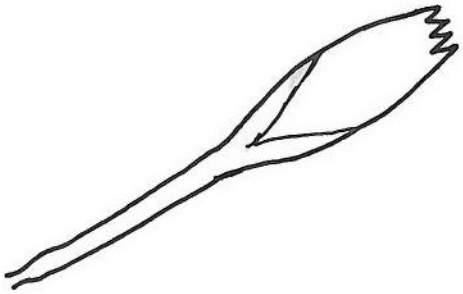
Ligulate florets are flat.



Ad. 25: Flower head: relative number of spatulate ray florets

"Relative" means the number of spatulate ray florets relative to the overall number of ray florets. It is this which is assessed, not the absolute number of spatulate ray florets.

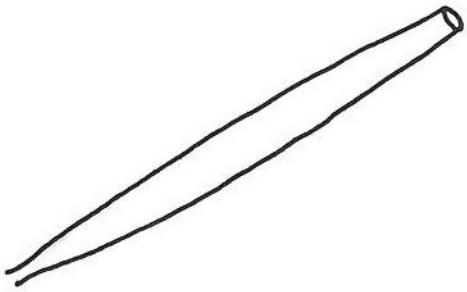
Spatulate ray florets are where part of the floret is tubular and part is flat.



Ad. 26: Flower head: relative number of quilled ray florets

"Relative" means the number of quilled ray florets relative to the overall number of ray florets. It is this which is assessed, not the absolute number of quilled ray florets.

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



Ad.30: Only varieties with spatulate or quilled ray florets: Ray floret: color of outer side

To be record on the quilled part of the floret, on the area facing upwards

Color to be recorded on this part.

Ad. 33: Ray floret: distribution of secondary color of inner side

1
at the base

2
in the basal quarter

3
in the basal half

Ad. 34: Ray floret: curvature

inner side

1	2	3	4	5
strongly incurving	weakly incurving	straight	weakly reflexing	strongly reflexing

Ad. 36: Ray floret: profile in cross section

To be observed at the midpoint of the floret

inner side

1	2	3	4	5	6	7
strongly concave	moderately concave	weakly concave	flat	weakly convex	moderately convex	strongly convex

Ad. 37: Ray floret: shape of apex

1	2	3
pointed	rounded	truncate

Ad. 38: Ray floret: indentations of tip

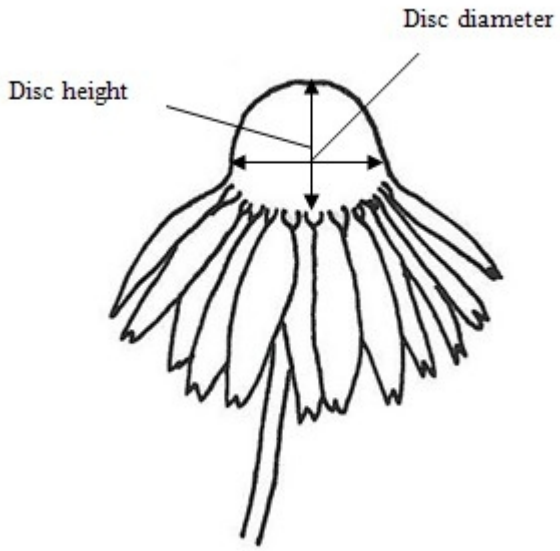
2	3	4
shallow	medium	deep

Ad. 39: Disc: type

1
daisy

2
anemone

Ad. 40: Only varieties with disc type: daisy: Disc: diameter
Ad. 42: Only varieties with disc type: daisy: Disc: height



Ad. 44: Only varieties with disc type: daisy: Disc: ratio height/diameter

3	5	7
low	medium	high

Ad. 46: Disc: diameter in relation to flower head

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

3	5	7
small	medium	large

Ad. 47: Only varieties with disc type: daisy: Disc: color of paleae (spikes)
Ad. 48: Only varieties with disc type: daisy: Disc: second color of paleae (spikes)

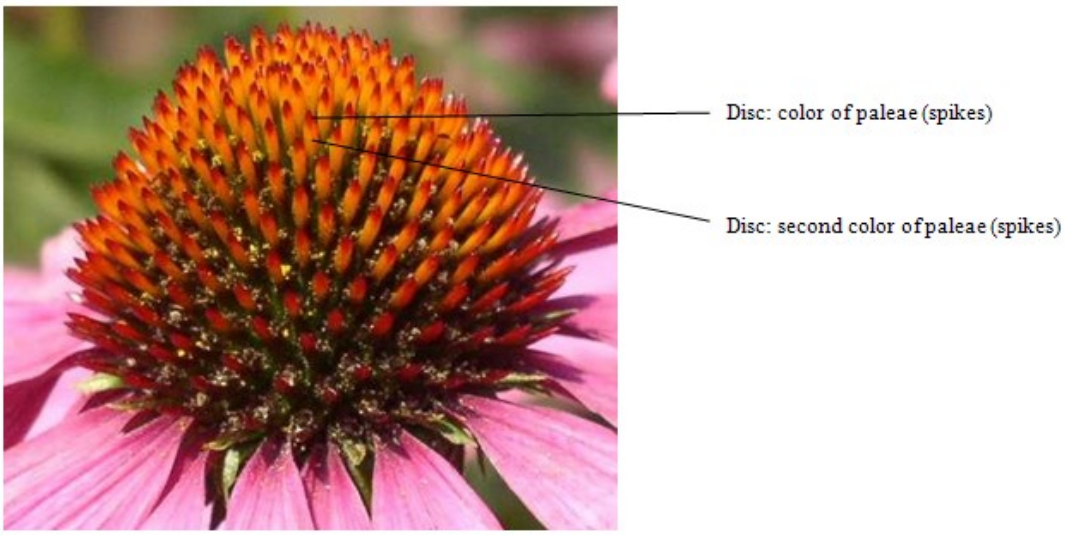
To be recorded on paleae half way between the base and the top of the disc, just before the disc florets associated with the paleae have dehisced/opened – (see diagram below)

Correct stage and position in head to record paleae colour

The color of the paleae (spikes) (characteristic 47) is always observed as the color at the tip, irrespective of area covered.

The second color (characteristic 48) is observed as the color directly below the tip (if different from the tip color).

Any further colors should be ignored.



Ad. 51: Only varieties with disc type: daisy: Disc: presence of ray florets within the disc

1
absent

9
present

Ad. 52: Only varieties with disc type: daisy: with ray florets within the disc: Disc: number of ray florets within the disc

3
few

7
many

Ad. 55: Only varieties with disc type: anemone: Disc floret: curvature

1	2	3
straight	weakly reflexed	strongly reflexed

Ad. 56: Only varieties with disc type: anemone: Disc floret: length of tube

3	5	7
short	medium	long

9. Literature

Bauer, R., Wagner, H. 1990: Echinacea. Handbuch für Ärzte, Apotheker und andere Naturwissenschaftler. Wissenschaftliche Verlagsgesellschaft GmbH Stuttgart, DE

Beschreibende Sortenliste Arznei und Gewürzpflanzen. 2002: Bundessortenamt: 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:

	Application date: (not to be filled in by the applicant)

TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire

1.1 Genus	
1.1.1 Botanical name	*Echinacea* Moench.
1.1.2 Common name	Echinacea, Cone Flower
1.2 Species (please indicate)	

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)

(……..……..…) 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.

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

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 [ ]

(please provide details)

(d) Other [ ]

(please provide details)

4.2.2 Vegetatively propagated varieties

(a) cuttings [ ]

(b) *in vitro* propagation [ ]

(c) other (state method) [ ]

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 (12)	**Leaf: variegation**		
	absent	Tomato Soup	1 [ ]
	present	Prairie Frost	9 [ ]
5.2 (31)	**Ray floret: main color of inner side**		
	green	Green Jewel	1 [ ]
	white	Purity	2 [ ]
	yellow	Harvest Moon	3 [ ]
	orange	Tiki Torch	4 [ ]
	red	Tomato Soup	5 [ ]
	pink	Meditation	6 [ ]
	purple	Magnus, Catharina	7 [ ]
5.3 (32)	**Ray floret: secondary color of inner side**		
	green		1 [ ]
	white		2 [ ]
	yellow		3 [ ]
	orange		4 [ ]
	red		5 [ ]
	pink	Green Envy	6 [ ]
	purple		7 [ ]
5.4 (39)	**Disc: type**		
	daisy	Merlot	1 [ ]
	anemone	Hot Papaya	2 [ ]

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

	Characteristics	Example Varieties	Note
5.5 (47)	**<u>Only varieties with disc type: daisy:</u> Disc: color of paleae (spikes)**		
	green		1 [ ]
	yellowish green	Green Jewel	2 [ ]
	yellow		3 [ ]
	orange	Purity, Mount Hood	4 [ ]
	red orange		5 [ ]
	red brown	Merlot, Hot Summer	6 [ ]
	purple brown	Fatal Attraction	7 [ ]
5.6 (51)	**<u>Only varieties with disc type: daisy: Disc: p</u>resence of ray florets within the disc**		
	absent	Merlot	1 [ ]
	present	Mount Hood	9 [ ]

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

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
Example	*Ray floret color*	*pink*	*purple*

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

Yes [ ] No [ ]

(If yes, please provide details)

7.3.1 Other information

Main use of the variety

(a) garden plant [ ]
(b) cut flower [ ]
(c) herbal/pharmaceutical [ ]
(d) other [ ]
(please provide details)

.....

7.3.2 A representative color image of the variety should accompany the Technical Questionnaire.

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]