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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

COREOPSIS *

UPOV Code(s):

COREO

Coreopsis L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by experts from the United Kingdom
to be considered by the
Technical Working Party for Ornamental Plants and Forest Trees
at its fifty-first session, to be held in Christchurch, New Zealand,
from 2019-02-18 to 2019-02-22

Disclaimer: this document does not represent UPOV policies or guidance

Alternative names:*

Botanical name	*English*	*French*	*German*	*Spanish*
Coreopsis L.	Coreopsis, Tickseed	Coréopsis	Mädchenauge	Coreopsis

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.]

TABLE OF CONTENTS PAGE

1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Coreopsis* L..

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of young plants or seed.

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

Vegetatively propagated varieties: 10 plants

Seed propagated varieties: sufficient 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 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 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.

3.4.2 Each test should be designed to result in a total of at least 10 plants for vegetatively propagated varieties, and 40 plants for seed propagated varieties.

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 seed-propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 20 plants or parts taken from each of 20 plants and any other observation 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 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 [to be completed] varieties. For varieties with other types of propagation the recommendation in the General Introduction and document TGP/13 "Guidance for new types and species". Section 4.5 Testing Uniformity should be followed.

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.

4.2.3 For the assessment of uniformity of seed 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 40 plants, 2 off-types are allowed.

4.3 Stability

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be 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: distribution of secondary color (characteristic 13)
(b) Only varieties with leaf: type: simple and divided or divided: Leaf: width of terminal leaflet (characteristic 16)
(c) Flower head: type (characteristic 21)
(d) Ray floret: main color (characteristic 28)
Gr.1: white
Gr.2: yellow
Gr.3: orange
Gr.4: pink
Gr.5: red
Gr.6: purple

(e) Ray floret: secondary color (characteristic 31)
Gr.1: white
Gr.2: yellow
Gr.3: orange
Gr.4: pink
Gr.5: red
Gr.6: purple

(f) Ray floret: length of corolla tube (characteristic 38)

(g) Only varieties with flower head: type: single and semi-double: Disc: color before anthesis (characteristic 44)

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 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

	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)-(h) See Explanations on the Table of Characteristics in Chapter 8.1

7 Growth stage key 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							
		upright							1
		semi-upright							2
		semi-spreading							3
		spreading							4
2.		**QN**	**MG/MS/VG**						
		Plant: height							
		short						Mercury Rising	3
		medium						Redshift	5
		tall							7
3.		**QN**	**MG/MS/VG**						
		Plant: width							
		narrow						CSGZ0002	3
		medium						Charlize	5
		broad						Mercury Rising	7
4.	**(*)**	**QN**	**VG**	**(+)**					
		Plant: density							
		very sparse							1
		sparse							2
		medium							3
		dense							4
		very dense							5
5.	**(*)**	**PQ**	**VG**	**(+)**	**(a)**				
		Leaf: type							
		simple							1
		simple and divided							2
		divided							3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
6.	**(*)**	**QN MG/MS/VG**	**(a), (b)**				
		<u>Only varieties with leaf: type: simple or simple and divided:</u> Leaf: length					
		short				Charlize	3
		medium				Mercury Rising	5
		long				CSGZ0002	7
7.	**(*)**	**QN MG/MS/VG**	**(a), (b)**				
		<u>Only varieties with leaf: type: simple or simple and divided:</u> Leaf: width					
		narrow				Mercury Rising	3
		medium				Baluptgonz	5
		broad				Charlize	7
8.	**(*)**	**QN MG/MS/VG**	**(+) (a), (b)**				
		<u>Only varieties with leaf: type: simple or simple and divided:</u> Leaf: length/width ratio					
		low					3
		medium					5
		high					7
9.		**QN MG/MS/VG**	**(a), (c), (d)**				
		<u>Only varieties with leaf: type: simple and divided or divided:</u> Leaf: length					
		short				Buttermilk	3
		medium				VIZCOR 609	5
		long				PRO538	7
10.		**QN MG/MS/VG**	**(a), (c), (d)**				
		<u>Only varieties with leaf: type: simple and divided or divided:</u> Leaf: width					
		narrow				Charlize	3
		medium				Buttermilk	5
		broad				VIZCOR 609	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
11.		**QN MG/MS/VG**	**(+) (a), (c)**				
		<u>Only varieties with leaf: type: simple and divided or divided:</u> Leaf: length/width ratio					
		low					3
		medium					5
		high					7
12.	**(*)**	**PQ VG**	**(a)**				
		Leaf : main color					
		yellow green					1
		light green					2
		medium green				Balupteam	3
		dark green				VIZCOR 609	4
13.	**(*)**	**PQ VG**	**(+) (a)**				
		Leaf: distribution of secondary color					
		none					1
		on margin					2
		marginal zone				Tequila Sunrise	3
		irregular					4
14.		**PQ VG**	**(a)**				
		Leaf: secondary color					
		whitish					1
		light yellow				Tequila Sunrise	2
		medium yellow					3
		yellow green					4
15.	**(*)**	**QN MG/MS/VG**	**(a), (d), (e)**				
		<u>Only varieties with leaf: type: simple and divided or divided:</u> Leaf: length of terminal leaflet					
		short				Buttermilk	3
		medium				Enchanted Eve	5
		long				Balupteam	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
16.	**(*)**	**QN MG/MS/VG**	**(a), (d), (e)**				
		Only varieties with leaf: type: simple and divided or divided: Leaf: width of terminal leaflet					
		narrow				VIZCOR 609	3
		medium				Enchanted Eve	5
		broad				Sophia	7
17.	**(*)**	**QN MG/MS/VG**	**(+) (a), (e)**				
		Only varieties with leaf: type: simple and divided or divided: Leaf: length/width ratio of terminal leaflet					
		low					3
		medium					5
		high					7
18.		**QN VG**	**(a)**				
		Leaf: glossiness					
		absent or very weak				Sophia	1
		weak					2
		medium				Buttermilk	3
		strong				Tweety	4
		very strong					5
19.	**(*)**	**QN MG/MS/VG**	**(+)**				
		Peduncle: length					
		short				Charlize	3
		medium				Red Elf	5
		long				PRO538	7
20.	**(*)**	**PQ VG**	**(+) (f)**				
		Flower head: position relative to foliage					
		below and at same level					1
		slightly above					2
		moderately above					3
		far above					4

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
21.	**(*)**	**PQ VG**	**(+)** **(f)**				
		Flower head: type					
		single				Cosmic Eye	1
		semi-double				Baluptowed	2
		double				DCOREO16	3
22.	**(*)**	**QN MG/MS/VG**	**(f)**				
		Flower head: diameter					
		small				Tweety	3
		medium				Red Elf	5
		large				Baluptgonz	7
23.	**(*)**	**QN MG/MS/VG**	**(f)**				
		Only varieties with flower head: type: single or semi-double: Flower head: number of ray florets					
		very few				Buttermilk	1
		few				Enchanted Eve	2
		medium				Baluptowed	3
		many					4
		very many					5
24.	**(*)**	**QN VG**	**(+)** **(f), (g)**				
		Ray floret: attitude of basal part					
		strongly ascending					1
		moderately ascending					2
		weakly ascending					3
		horizontal					4
		weakly descending					5
		moderately descending					6
		strongly descending					7
25.	**(*)**	**QN MG/MS/VG**	**(f), (g)**				
		Ray floret: length					
		short				Solar Dance	3
		medium				Red Elf	5
		long				Baluptgonz	7

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26.	**(*)**	**QN**	**MG/MS/VG**		**(f), (g)**				
		Ray floret: width							
		narrow						VIZCOR 609	3
		medium						Redshift	5
		broad						CSGZ0002	7
27.	**(*)**	**QN**	**MG/MS/VG**	**(+)**	**(f), (g)**				
		Ray floret: length/width ratio							
		low							3
		medium							5
		high							7
28.	**(*)**	**PQ**	**VG**		**(f), (g), (h)**				
		Ray floret: main color							
		RHS colour chart (indicate reference number)							
29.	**(*)**	**PQ**	**VG**	**(+)**	**(f), (g), (h)**				
		Ray floret: distribution of main color							
		basal half							1
		basal half and margins							2
		basal three quarters							3
		basal three quarters and margins							4
		distal three quarters						Balupteamed	5
		distal half						Cosmic Eye	6
		throughout						Charlize	7

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30.	**(*)**	**PQ** **VG**	**(+)** **(f), (g), (h)**				
		Ray floret: distribution of secondary color					
		none				Charlize	1
		base				Balupteamed	2
		base and margins					3
		basal quarter				Baluptowed	4
		basal quarter and margins					5
		basal half					6
		basal half and margins					7
		basal three quarters					8
		basal three quarters and margins					9
		distal three quarters					10
		distal half					11
		distal quarter				Enchanted Eve	12
		tip					13
		throughout					14
		margins					15
31.	**(*)**	**PQ** **VG**	**(f), (g), (h)**				
		Ray floret: secondary color					
		RHS Colour Chart (indicate reference number)					
32.	**(*)**	**PQ** **VG**	**(+)** **(f), (g), (h)**				
		Ray floret: pattern of secondary color					
		solid					1
		solid and flushed					2
		flushed					3

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
33.	**(*)**	**PQ VG**	**(+) (f), (g), (h)**				
		Ray floret: distribution of tertiary color					
		none					1
		base					2
		base and margins					3
		basal quarter					4
		basal quarter and margins					5
		basal half					6
		distal half					7
		distal quarter					8
		tip					9
		margins					10
34.		**PQ VG**	**(f), (g), (h)**				
		Ray floret: tertiary color					
		RHS Colour Chart (indicate reference number)					
35.	**(*)**	**PQ VG**	**(+) (f), (g), (h)**				
		Ray floret: pattern of tertiary color					
		solid					1
		solid and flushed					2
		flushed					3
36.		**QL VG**					
		Ray floret: color of outer side compared to inner side					
		similar					1
		markedly different					2
37.		**PQ VG**					
		Ray floret: color of outer side , where markedly different to inner side					
		RHS colour chart (indicate reference number)					

		English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
38.	**(*)**	**QN** **VG**	**(+)** **(f), (g)**				
		Ray floret: length of corolla tube					
		absent or very short				Cosmic Eye	1
		short					2
		medium				Jethro Tull	3
		long					4
		very long				DCOREO16	5
39.	**(*)**	**QN** **VG**	**(+)** **(f), (g)**				
		Ray floret: longitudinal axis					
		strongly incurving					1
		moderately incurving					2
		weakly incurving					3
		straight					4
		weakly reflexing					5
		moderately reflexing					6
		strongly reflexing					7
40.	**(*)**	**QN** **VG**	**(+)** **(f), (g)**				
		Ray floret: profile in cross section					
		strongly concave					1
		moderately concave					2
		weakly concave					3
		flat					4
		weakly convex					5
		moderately convex					6
		strongly convex					7
41.	**(*)**	**QN** **VG**	**(+)** **(f), (g)**				
		Ray floret: number of indentations at the tip					
		absent or very few					1
		few					2
		medium					3
		many					4
		very many					5

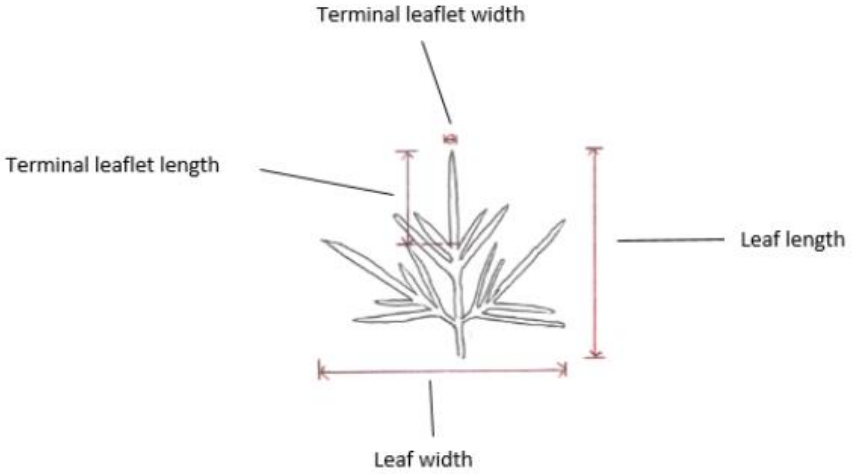
		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
42.	**(*)**	**QN**	**VG**	**(+)**	**(f), (g)**				
		Ray floret: depth of indentations at the tip							
		very shallow							1
		shallow							2
		medium							3
		deep							4
		very deep							5
43.	**(*)**	**QN**	**MG/MS/VG**		**(f)**				
		<u>Only varieties with flower head: type: single or semi-double:</u> Disc: diameter							
		very small							1
		small						Buttermilk	2
		medium						CSGZ0002	3
		large						Cosmic Eye	4
		very large							5
44.	**(*)**	**PQ**	**VG**		**(f)**				
		<u>Only varieties with flower head: type: single and semi-double:</u> Disc: color before anthesis							
		yellow green						PRO538	1
		yellow						CSGZ0002	2
		orange						Enchanted Eve	3
		reddish brown						Buttermilk	4
		blackish purple						Peach Sparkle	5

8. Explanations on the Table of Characteristics

8.1 Explanations covering several characteristics

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

(a) Observations on the leaves should be made on fully developed leaves from the middle part of the stem
(b) For varieties with simple and divided leaves, the simple ones should be assessed.
(c) For varieties with simple and divided leaves, the divided ones should be assessed.
(d)



(e) Only observed on divided leaves.
(f) Observations on the flower head, ray florets and disc should be made on fully open flowers just after anther dehiscence has started.
(g) Observations on the ray florets should be made on the inner surface of the outer whorl of florets.
(h) Where more than one color is present the main color is the color with the largest surface area. The color with the second largest area is the secondary color. The color with the third largest area is the tertiary color. In cases where the areas of the colors are too similar to reliably decide which color has the largest area, the darkest color is considered to be the main color.

8.2 Explanations for individual characteristics

Ad. 1: Plant: growth habit

1
upright

2
semi-upright

3
semi-spreading

4
spreading

Ad. 4: Plant: density

2
sparse

3
medium

5
dense

Ad. 5: Leaf: type

1
simple

3
divided

Some varieties have both types of leaves and the assessment of this characteristic should be made on the predominant type of leaf. The state 'simple and divided' should be used where there is no predominant type and the variety has a similar amount of both types of leaves.

Ad. 8: Only varieties with leaf: type: simple or simple and divided: Leaf: length/width ratio

3
low

5
Medium

7
high

Ad. 11: Only varieties with leaf: type: simple and divided or divided: Leaf: length/width ratio

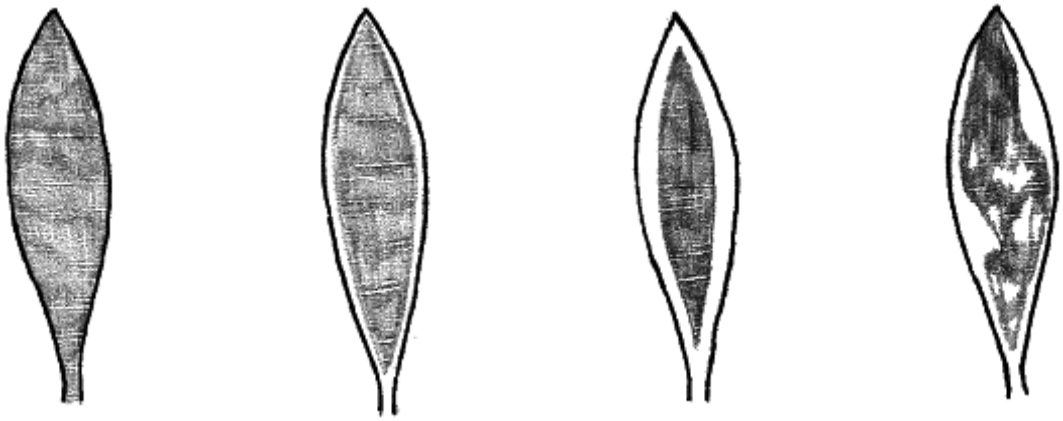
3
low

5
medium

7
high

Ad. 13: Leaf: distribution of secondary color

The secondary colour is the part on the diagram that is not shaded.



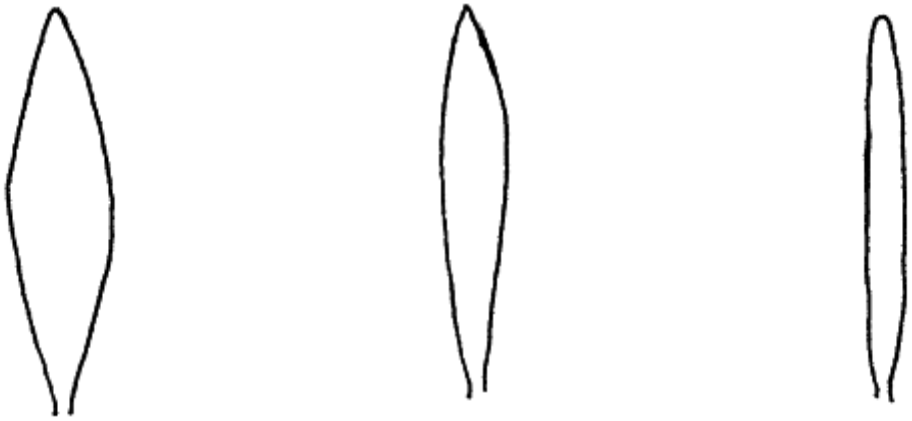
1
none

2
on margin

3
marginal zone

4
irregular

Ad. 17: Only varieties with leaf: type: simple and divided or divided: Leaf: length/width ratio of terminal leaflet



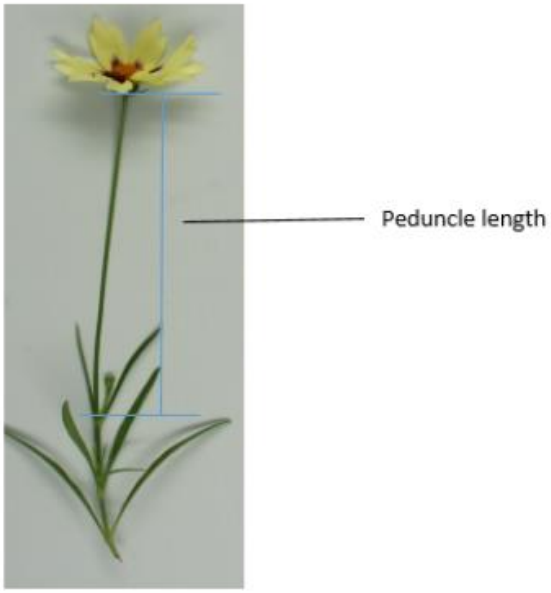
3
low

5
medium

7
high

Ad. 19: Peduncle: length

This is an overall assessment of the variety.



Ad. 20: Flower head: position relative to foliage

1
below and at same level

2
slightly above

3
moderately above

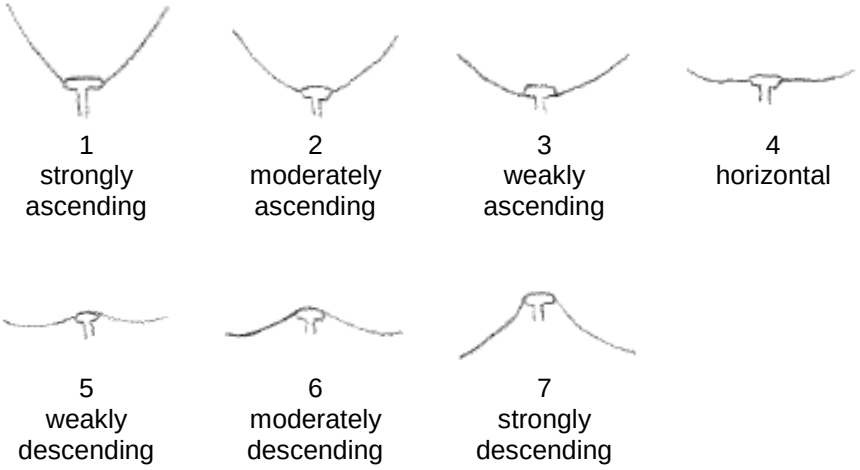
Ad. 21: Flower head: type

1
single

2
semi double

3
double

Ad. 24: Ray floret: attitude of basal part



1 strongly ascending
2 moderately ascending
3 weakly ascending
4 horizontal
5 weakly descending
6 moderately descending
7 strongly descending

Ad. 27: Ray floret: length/width ratio

3 low
5 medium
7 high

Ad. 29: Ray floret: distribution of main color

1 basal half
2 basal half and margins
3 basal three quarters
4 basal three quarters and margins
5 distal three quarters
6 distal half
7 throughout

Ad. 30: Ray floret: distribution of secondary color

1
none

2
base

3
base and margins

4
basal quarter

5
basal quarter and margins

6
basal half

7
basal half and margins

8
basal three quarters

9
basal three quarters margins

10
distal three quarters

11
distal half

12
distal quarter

13
tip

14
throughout

15
margins

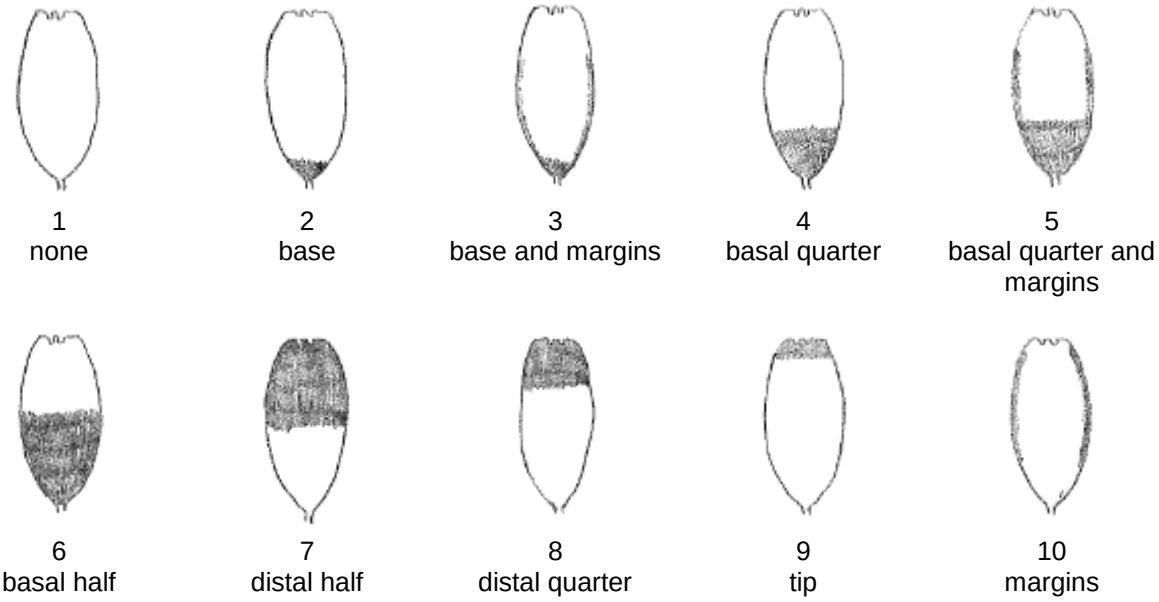
Ad. 32: Ray floret: pattern of secondary color

1
solid

2
solid and flushed

3
flushed

Ad. 33: Ray floret: distribution of tertiary color



1
none

2
base

3
base and margins

4
basal quarter

5
basal quarter and margins

6
basal half

7
distal half

8
distal quarter

9
tip

10
margins

Ad. 35: Ray floret: pattern of tertiary color

See Ad. 32

Ad. 38: Ray floret: length of corolla tube

1
absent or very short

3
medium

5
very long

Ad. 39: Ray floret: longitudinal axis

1
strongly incurving

2
moderately incurving

3
weakly incurving

4
straight

5
weakly reflexing

6
moderately reflexing

7
strongly reflexing

Ad. 40: Ray floret: profile in cross section

The cross section should be observed at the mid point along the floret.

1
strongly concave

2
moderately concave

3
weakly concave

4
flat

5
weakly convex

6
moderately convex

7
strongly convex

Ad. 41: Ray floret: number of indentations at the tip

1	2	3	4	5
absent or very few	few	medium	many	very many

Ad. 42: Ray floret: depth of indentations at the tip

1	2	3	4	5
very shallow	shallow	medium	deep	very deep

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

9. Literature

Rice, G. (ed)., 2006: Royal Horticultural Society Encyclopedia of Perennials.
Dorling Kinsdersley Ltd.. London, GB pp. 133-135

Brickell, C. (ed)., 2016: Royal Horticultural Society A - Z Encyclopedia of Garden Plants
Dorling Kinsdersley Ltd.. London, GB pp. 283-284

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 Botanical name	*Coreopsis* L.
1.2 Common name	Coreopsis, Tickseed

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	[ ]
(c)	Hybrid	[ ]
(d)	Other (please provide details)	[ ]

4.2.2 Vegetative propagation

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

4.2.3 Other [ ]
(Please provide details)

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 (2)	**Plant: height**		
	very short		1 [ ]
	very short to short		2 [ ]
	short	Mercury Rising	3 [ ]
	short to medium		4 [ ]
	medium	Redshift	5 [ ]
	medium to tall		6 [ ]
	tall		7 [ ]
	very tall		8 [ ]
	tall to very tall		9 [ ]
5.2 (12)	**Leaf : main color**		
	yellow green		1 [ ]
	light green		2 [ ]
	medium green	Balupteam	3 [ ]
	dark green	VIZCOR 609	4 [ ]
5.3 (13)	**Leaf: distribution of secondary color**		
	none		1 [ ]
	on margin		2 [ ]
	marginal zone	Tequila Sunrise	3 [ ]
	irregular		4 [ ]
5.4 (21)	**Flower head: type**		
	single	Cosmic Eye	1 [ ]
	semi-double	Baluptowed	2 [ ]
	double	DCOREO16	3 [ ]

	Characteristics	Example Varieties	Note
5.5 (22)	**Flower head: diameter**		
	very small		1 [ ]
	very small to small		2 [ ]
	small	Tweety	3 [ ]
	small to medium		4 [ ]
	medium	Red Elf	5 [ ]
	medium to large		6 [ ]
	large	Baluptgonz	7 [ ]
	large to very large		8 [ ]
	very large		9 [ ]
5.6(i) (28)	**Ray floret: main color**		
	RHS colour chart (indicate reference number)		
5.6(ii) (28)	**Ray floret: main color**		
	white		1 [ ]
	yellow	Balupteamed	2 [ ]
	orange	Sweet Marmalade	3 [ ]
	pink	URITW02	4 [ ]
	red	Mercury Rising	5 [ ]
	purple	Starstruck	6 [ ]
5.7(i) (31)	**Ray floret: secondary color**		
	RHS Colour Chart (indicate reference number)		
5.7(ii) (31)	**Ray floret: secondary color**		
	white		1 [ ]
	yellow	Enchanted Eve	2 [ ]
	orange		3 [ ]
	pink		4 [ ]
	red	Balupteamed	5 [ ]
	purple		6 [ ]
5.8 (38)	**Ray floret: length of corolla tube**		
	absent or very short	Cosmic Eye	1 [ ]
	short		2 [ ]
	medium	Jethro Tull	3 [ ]
	long		4 [ ]
	very long	DCOREO16	5 [ ]

	Characteristics	Example Varieties	Note
5.9 (44)	**<u>Only varieties with flower head: type: single and semi-double:</u> Disc: color before anthesis**		
	yellow green	PRO538	1 [ ]
	yellow	CSGZ0002	2 [ ]
	orange	Enchanted Eve	3 [ ]
	reddish brown	Buttermilk	4 [ ]
	blackish purple	Peach Sparkle	5 [ ]

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	*Flower head: diameter*	*small*	*medium*

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 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.]

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:

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]