

UPOV

TG/COSMO(proj.1)

ORIGINAL: English

DATE: 2009-07-31

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

DRAFT

**COSMOS;
CHOCOLATE COSMOS;
YELLOW COSMOS**

UPOV Code:
COSMO_BIP; COSMO_ATR;
COSMO_SUL

Cosmos bipinnatus Cav.;
Cosmos atrosanguineus (Hook.) Voss;
Cosmos sulphureus Cav.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from Japan

to be considered by the

Technical Working Party for Ornamental Plants and Forest Trees

at its forty-second session, to be held in Angers, France, from September 14 to 18, 2009

Alternative Names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Cosmos bipinnatus</i> Cav., <i>Cosmos atrosanguineus</i> (Hook.) Voss, <i>Cosmos sulphureus</i> Cav.	Cosmos, Chocolate cosmos	Cosmos	Schmuckkorbchen (Kosmee), Fiederblättrige Schmuckblume	Mirasol, Cosmos

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 Guideline

These Test Guidelines apply to all varieties of *Cosmos bipinnatus* Cav., *Cosmos atrosanguineus* (Hook.) Voss., and *Cosmos sulphureus* Cav. of the family *Asteraceae* and varieties of hybrids between these species.

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 seeds or rooted cuttings.

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

seed-propagated varieties: sufficient seed to produce 50 plants;

vegetatively propagated varieties: 10 rooted cuttings.

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.

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 In the case of seed-propagated varieties, each test should be designed to result in a total of at least 50 plants.

3.4.3 In the case of vegetatively propagated varieties, each test should be designed to result in a total of at least 10 plants.

3.5 *Number of Plants / Parts of Plants to be Examined*

3.5.1 Unless otherwise indicated, all observations on single plants of seed-propagated varieties should be made on 20 plants or parts taken from each of 20 plants and any other observations made on all plants in the test.

3.5.2 Unless otherwise indicated, all observations on single plants of vegetatively propagated varieties should be made on 10 plants or parts taken from each of 10 plants and any other observations made on all plants in the test.

3.6 *Additional Tests*

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

4. Assessment of Distinctness, Uniformity and Stability

4.1 *Distinctness*

4.1.1 General Recommendations

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

4.1.2 Consistent Differences

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

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being

examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.2 *Uniformity*

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

4.2.2 For the assessment of uniformity of seed-propagated varieties which are cross-pollinated, the recommendations in the General Introduction for cross-pollinated varieties should be followed as appropriate.

4.2.3 For the assessment of uniformity of vegetatively propagated varieties, a population standard of 1% and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 10 plants, 1 off-type is allowed.

4.3 *Stability*

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

4.3.2 Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new seed or plant stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied.

5 Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

- (a) Plant: height (characteristic 1)
- (b) Leaf: type (characteristic 5)
- (c) Flower head: type (characteristic 11)
- (d) Only single flower head varieties: Flower head: collarette segments (characteristic 12)
- (e) Flower head: tubular type of ray floret (characteristic 13)

- (f) Ray floret: main color of upper side (characteristic 20) with the following color groups:
- Gr. 1: white
 - Gr. 2: yellow
 - Gr. 3: orange
 - Gr. 4: pink
 - Gr. 5: red
 - Gr. 6: purple red
 - Gr. 7: brown red

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

6. Introduction to the Table of Characteristics

6.1 *Categories of Characteristics*

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 *States of Expression and Corresponding Notes*

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

6.3 *Types of Expression*

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

6.4 *Example Varieties*

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

6.4.2 Species of example varieties

Cosmos bipinnatus Cav.

- Sensation Versailles
- Sensation Radiance
- Sensation Purity
- Bridal Bouquet COS
- Psyche Pink
- Seashells

Cosmos sulphureus Cav.

- Sunset
- Sunrise
- Bright Light

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

(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. (*)	Plant: height					
QN	short					3
	medium				Sensation Versailles, Sunset	5
	tall					7
2.	Stem: number of primary branches					
QN	few					3
	medium				Sensation Radiance, Sunset	5
	many					7
3. (*)	Stem: color					
PQ	(a) light green					1
	green					2
	green tinged with brown				Sensation Radiance	3
	reddish					4
	purple					5
	brown					6
4.	Stem: pubescence					
QN	(a) absent or very weak				Sunrise	1
	medium				Bright Light	2
	strong				Sunset	3
5. (*) (+)	Leaf: type	We add this characteristic from MX.				
QL	(b) broad pinnate					1
	bipinnate					2

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
6.	Leaf: degree of division					
(+)						
QN	(b)	few				1
		medium				2
		many				3
7.	Leaf: length including petiole					
(*)						
QN	(b)	short				3
		medium			Sensation Radiance, Sunset	5
		long				7
8.	Leaf: width					
(*)						
QN	(b)	narrow				3
		medium			Sensation Radiance, Sunset	5
		broad				7
9.	Leaf: intensity of green color					
QN	(b)	light				3
		medium			Sensation Radiance, Sunset	5
		dark				7
10.	Leaf: width of terminal leaflet					
(*)						
(+)						
QN	(b)	<u>Only varieties with broad pinnate leaves:</u> Leaf: width of terminal leaflet				
		narrow			Sensation Versailles	3
		medium				5
		broad			Sunset	7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
11. (* (+)	Flower head: type					
PQ	single				Sensation Radiance	1
	semi double					2
	double					3
	anemone				Bridal Bouquet COS	4
12. (* (+)	<u>Only single flower head varieties:</u> Flower head: collarette segments					
QL	absent					1
	present				Psyche Pink	9
13. (* (+)	Flower head: tubular type of ray floret					
QL	absent					1
	present				Seashells	9
14. (*	Flower head: diameter					
QN	small					3
	medium					5
	large					7
15. (* (+)	Flower head: disc diameter relative to head diameter (including anemone type)					
QN	small					3
	medium					5
	large					7

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
16. (*) (+)	Ray floret: length					
QN	(c)	short				3
		medium				5
		long				7
17. (*) (+)	Ray floret: width					
QN	(c)	narrow				3
		medium				5
		broad				7
18. (*) (+)	Ray floret: ratio length/ width					
QN	(c)	low				3
		medium				5
		high				7
19. (*) (+)	Ray floret: depth of incision of apex					
QN	(c)	shallow				3
		medium			Sensation Radiance, Sunset	5
		deep				7
20. (*)	Ray floret: main color of upper side					
PQ	(c)	RHS Colour Chart (indicate reference				
	(d)	number)				

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
21. (*)	Ray floret: secondary color of upper side					
PQ	(c)	RHS Colour Chart (indicate reference number)				
	(d)					
22. (*) (+)	Ray floret: distribution of secondary color of upper side					
PQ	(c)	base			Sensation Radiance	1
		marginal zone				2
		stripes				3
23. (*)	<u>Only tubular- petaled varieties:</u>Ray floret: main color of lower side					
PQ	(c)	RHS Colour Chart (indicate reference number)				
	(d)					
24. (*)	Ray floret: change of color with age					
QL		absent				1
		present				9
25. (*)	(e)	Disc: main color(including anemone type)				
PQ		RHS Colour Chart (indicate reference number)				

	English	français	deutsch	español	Example Varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
26.	<u>Only seeds</u>					
(*)	<u>propagated</u>					
	<u>varieties: Time of</u>					
	<u>beginning of</u>					
	<u>flowering</u>					
QN	early					1
	medium					2
	late					3

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 should be observed on the middle third of the main stem.
- (b) Leaf characteristics should be observed on typical leaves taken from the upper third of the stem.
- (c) Ray floret should be observed on the outermost row of ray florets.
- (d) The main color is the color with the largest total surface area, the secondary color (if present) is the color with the second largest total surface area.
- (e) The color of disc should be observed before anther dehiscence.

8.2 *Explanations for individual characteristics*

Ad. 5: Leaf: type



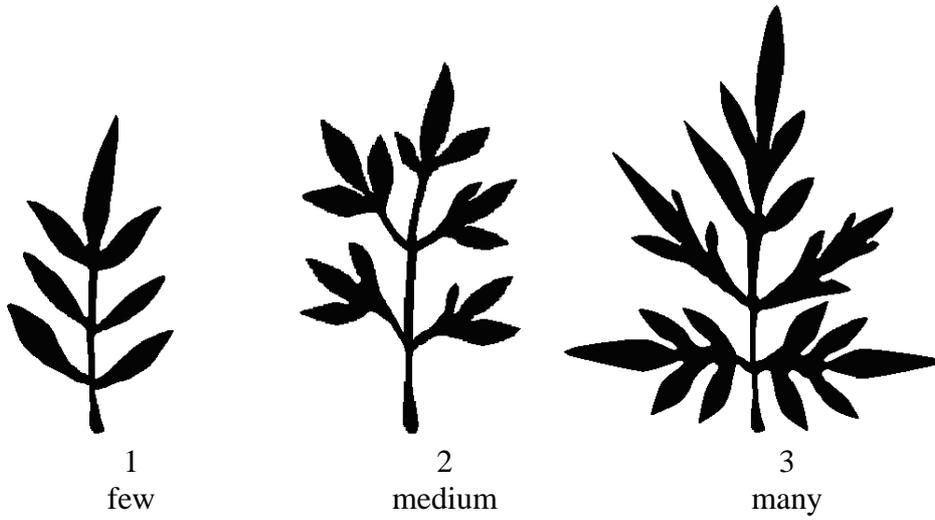
1
broad pinnate



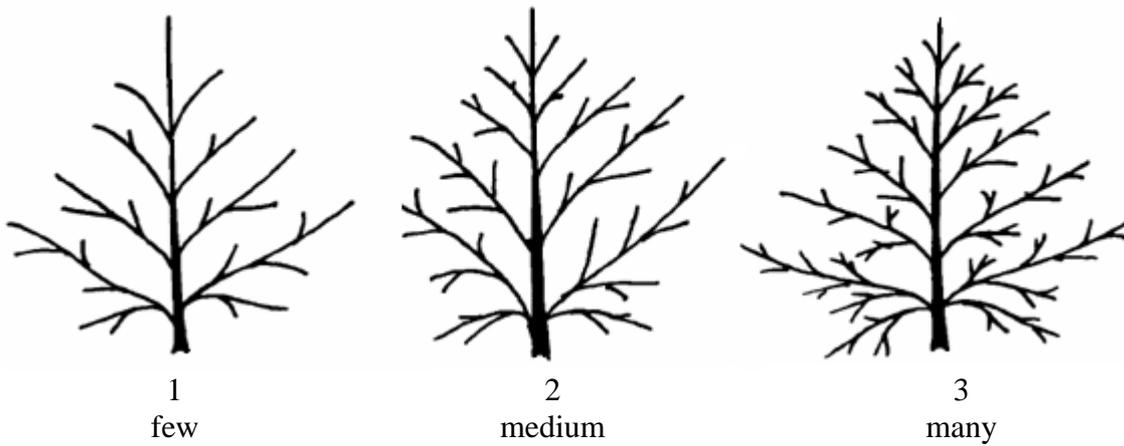
2
bipinnate

Ad. 6: Leaf: degree of division

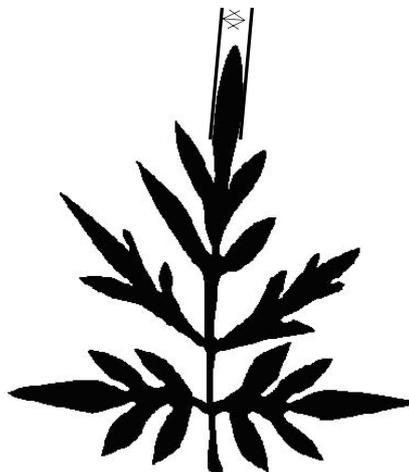
(For the leaf type of broad pinnate)



(For the leaf type of bipinnate)



Ad.10: Only varieties with broad pinnate leaves: Leaf: width of terminal leaflet



Ad. 11: Flower head: type

1. single: flower heads with one row of ray florets
2. semi double: flower heads with two rows to five row of ray florets
3. double: flower heads with more than six rows of ray florets
4. anemone: flower heads with anemone type in disc florets



1
single



2
semi double

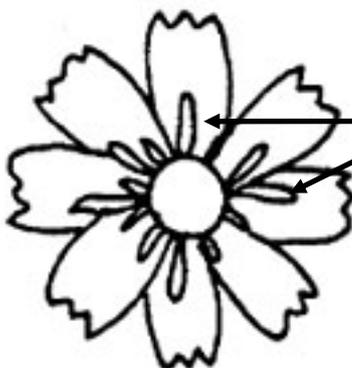


3
double



4
anemone

Ad. 12: Only single flower head varieties: Flower head: collarette segments



9
present

collarette segments



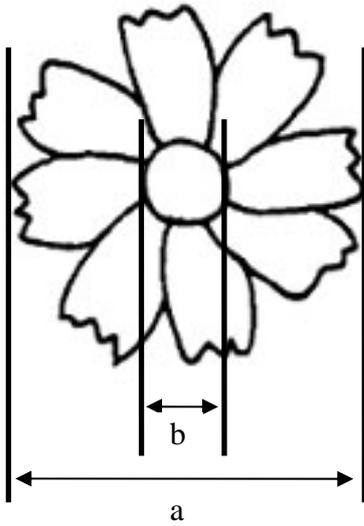
Ad. 13: Flower head: tubular type of ray floret



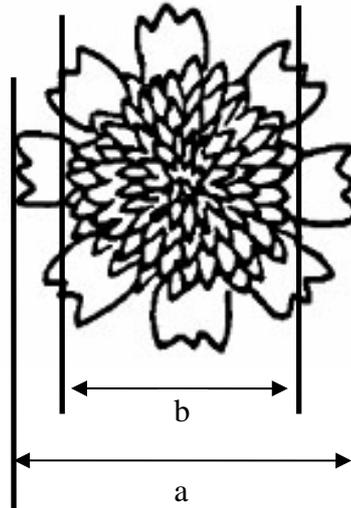
9
present

Ad. 15: Flower head: disc diameter relative to head diameter(including anemone type)

a: head diameter
b: size of disc florets



3
small

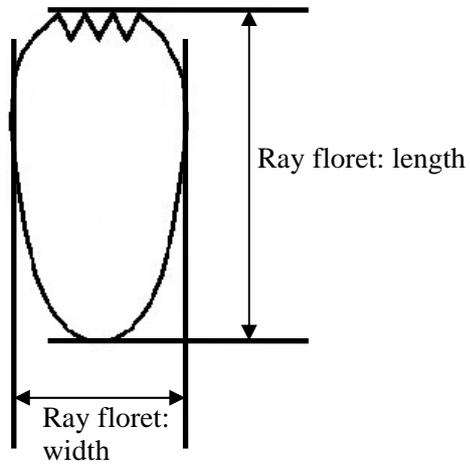


7
large

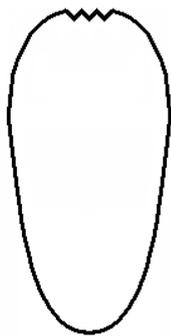
Ad.16: Ray floret: length

Ad.17: Ray floret: width

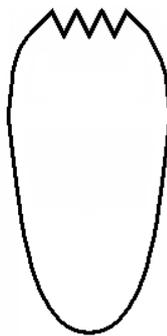
Ad.18: Ray floret: ratio length/width



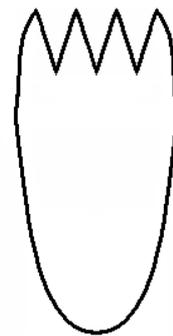
Ad. 19: Ray floret: depth of incision of apex



3
shallow



5
medium



7
deep

Ad. 22: Ray floret: distribution of secondary color of upper side



1
base



2
marginal zone



3
stripes

9. Literature

Tsukamoto, Y., 1994: The Grand Dictionary of Horticulture Volume 1. The Shogakukan Ltd., Tokyo, JP, pp. 860 to 862.

L. H. Bailey Hortorium, Cornell University, 1976: Hortus Third, A Concise Dictionary of Plants Cultivated in the U.S. and Canada the staff of the L. H. Bailey Hortorium, Cornell University. Macmillan Publishing Co., NewYork, p.321.

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		
1.1.1 Botanical name	<input type="text" value="Cosmos bipinnatus Cav."/>	[]
1.1.2 Common name	<input type="text" value="Cosmos"/>	
1.2.1 Botanical name	<input type="text" value="Cosmos atrosanguineus (Hook.) Voss"/>	[]
1.2.2 Common name	<input type="text" value="Chocolate cosmos"/>	
1.3.1 Botanical name	<input type="text" value="Cosmos sulphureus Cav."/>	[]
1.3.2 Common name	<input type="text" value="Yellow cosmos"/>	
1.4 Hybrid species (Please provide details)	<input type="text"/>	[]
2. Applicant		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	
Fax No.	<input type="text"/>	
E-mail address	<input type="text"/>	
Breeder (if different from applicant)	<input type="text"/>	

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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3. Proposed denomination and breeder's reference

Proposed denomination
(if available)

Breeder's reference

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
#4. Information on the breeding scheme and propagation of the variety		
4.1 Breeding scheme		
Variety resulting from:		
4.1.1 Crossing		
(a) controlled cross (please state parent varieties)	[]	
(b) partially known cross (please state known parent variety(ies))	[]	
(c) unknown cross	[]	
4.1.2 Mutation (please state parent variety)	[]	
4.1.3 Discovery and development (please state where and when discovered and how developed)	[]	
4.1.4 Other (please provide details)	[]	
4.2 Method of propagating the variety		
4.2.1 Vegetative propagation		
(a) cuttings	[]	
(b) tubers	[]	
(c) <i>in vitro</i> propagation	[]	
(d) other (state method)	[]	
4.2.2 Seed (please provide details)	[]	
4.2.3 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:	
<p>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).</p>			
Characteristics	Example Varieties	Note	
<p>5.1 Plant: height (1)</p> <p>short</p> <p>medium</p> <p>tall</p>	<p>Sensation Versailles, Sunset</p>	<p>3[]</p> <p>5[]</p> <p>7[]</p>	
<p>5.2 Flower head: type (11)</p> <p>single</p> <p>semi double</p> <p>double</p> <p>anemone</p>	<p>Sensation Radiance</p> <p>Bridal Bouquet COS</p>	<p>1[]</p> <p>2[]</p> <p>3[]</p> <p>4[]</p>	
<p>5.3 <u>Only single flower head varieties:</u> Flower head: collarette segments (12)</p> <p>absent</p> <p>present</p>	<p>Psyche Pink</p>	<p>1[]</p> <p>9[]</p>	
<p>5.4 Flower head: tubular type of ray floret (13)</p> <p>absent</p> <p>present</p>	<p>Seashells</p>	<p>1[]</p> <p>9[]</p>	
<p>5.5(i) Ray floret: main color of upper side (20)</p> <p>RHS Colour Chart (indicate reference number)</p>			

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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Characteristics	Example Varieties	Note
5.5(ii) Ray floret: main color of upper side (20)		
white		1[]
yellow		2[]
orange		3[]
pink		4[]
red		5[]
red purple		6[]
brown red		7[]
other color(indicate)		8[]

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

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

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
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<i>Example</i>	<i>Flower head: diameter</i>	<i>small</i>	<i>medium</i>
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Comments:

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes [] No []

(If yes, please provide details)

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

Yes [] No []

(If yes, please provide details)

7.3 Main use of the variety

- (a) pot plant []
- (b) garden plant []
- (c) cut flower []
- (d) other []
(please provide details)

.....

7.4 A representative color photograph 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:
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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	<input type="text"/>		
Signature	<input type="text"/>	Date	<input type="text"/>

[End of document]