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WORKING PAPER ON THE TEST GUIDELINES FOR CELOSIA (*Celosia* L.)

Document prepared by experts from the Netherlands

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I. Subject of these Guidelines

These Test Guidelines apply to all vegetatively and seed propagated varieties of *Celosia* L. of the family Amaranthaceae.

II. Material Required

1. The competent authorities decide when, where and in what quantity and quality the plant material required for testing the variety is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must make sure that all customs formalities are complied with. As a minimum, the following quantity of material is recommended:

vegetatively propagated variety: 100 rooted cuttings

seed propagated variety: 5 grams

2. The material supplied should be visibly healthy, not lacking in vigor or affected by any important pests or diseases.

3. The plant material must not have undergone any treatment unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

III. Conduct of Tests

1. A test should normally be conducted for one growing period. If distinctness and/or uniformity cannot be sufficiently established in one growing period, the test should be extended for a second growing period.

2. The test should normally be conducted at one place. If any important characteristics of the variety cannot be seen at that place, the variety may be tested at an additional place.

3. The test should be carried out in the glasshouse under the following growing conditions:

Seed propagated varieties:

Sowing-method:	-	preferably direct seeding (taproot)
Temperature directly after sowing:	-	24-26 °C
Ventilation temperature	-	day ca. 27 °C, night ca. 32 °C

after ca. 1 week:

Temperature	-	day ca. 20 °C, night ca. 17 °C
Ventilation temperature during the day	-	ca. 21-32° C
Ventilation temperature during the night	-	ca. 18 °C
Humidity	-	90-95%

The top layer of the soil must be kept moist.

Temperature after ca. 2 to 3 weeks:-		day ca. 19 °C, night ca. 17 °C
Ventilation temperature	-	day ca. 20° C, night ca. 18° C
Humidity	-	ca. 80-85%

Temperature 6 to 8 weeks after sowing	-	day ca. 16° C, night ca. 15 °C
Ventilation temperature	-	day ca. 17 °C, night ca. 16 °C
Humidity	-	ca. 80-85%

Vegetatively propagated varieties:

Temperature	-	directly after planting, ca. 20 -25 ° C, slowly decreasing to ca. 16 ° C
Humidity	-	ca. 80-85%

Until the flowers appear, sprinkling should be given from above.

After appearance of the flowers, the soil should be kept more dry and sprinkling should not be given from above because of the chance of a botrytis infestation.

Base fertilization:	-	not
Fertilization during growth:	-	not
Substrate:	-	sandy, poor substrate
Sowing distance:	-	ca. 32 pl/ m ² , max. 64 pl/m ²
Shading	-	not, Celosia is very photo-sensitive

Most Celosia varieties need to be supported by 2-3 layers of wire netting.

The size of the tests should be such that plants or parts of plants may be removed for measurement and counting without prejudice to the observations which must be made up to the end of the growing period. Each test should include a total of 60 plants. Separate plots for observation and for measuring can only be used if they have been subject to similar environmental conditions.

4. Additional tests for special purposes may be established.

IV. Methods and Observations

1. All observations determined by measurement or counting should be made on 10 plants or parts taken from each of 10 plants.

2. For the assessment of uniformity a population standard of 1% with an acceptance probability of at least 95% should be applied. In the case of a sample size of 60 plants, the maximum number of off-types allowed would be 2.

3. Unless otherwise indicated, all observations should be made on plants with a full-grown inflorescence. All observations on the flower should be made at the beginning of anther dehiscence and all observations on the leaf should be made on a full-grown leaf, located at the middle third of the stem.

4. 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 tolerance set out in British Standard 950, Part I. These determinations should be made with the plant part placed against a white background.

V. Grouping of Varieties

1. The collection of varieties to be grown should be divided into groups to facilitate the assessment of distinctness. Characteristics which are suitable for grouping purposes are those which are known from experience not to vary, or to vary only slightly, within a variety. Their various states of expression should be fairly evenly distributed throughout the collection.

2. It is recommended that the competent authorities use the following characteristics for grouping varieties:

- (a) Inflorescence: main shape (characteristic 21)
- (b) Inflorescence: color (characteristic 24)

VI. Characteristics and Symbols

1. To assess distinctness, uniformity and stability, the characteristics and their states as given in the Table of Characteristics should be used.

2. Notes (numbers), for the purposes of electronic data processing, are given opposite the states of expression for each characteristic.

3. Legend:

(*) Characteristics that should be used on all varieties in every growing period over which examinations are made and always be included in the variety descriptions, except when the state of expression of a preceding characteristic or regional environmental conditions render this impossible.

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

VII. 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					
(*)					
very short	très basse	sehr niedrig	muy bajo		1
short	basse	niedrig	bajo		3
medium	moyenne	mittel	medio		5
tall	haute	hoch	alto		7
very tall	très haute	sehr hoch	muy alto		9
2. Stem: thickness					
(*)					
thin					3
medium	moyenne	mittel	medio		5
thick					7
3. Stem: anthocyanin coloration					
(*)					
absent	absentes	fehlend	ausentes		1
present	présentes	vorhanden	presentes		9
4. Stem: degree of anthocyanin coloration at the base					
(*)					
absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil		1
very weak	faible	gering	débil		3
medium	moyenne	mittel	medio		5
strong	forte	stark	fuerte		7
very strong	très forte	sehr stark	muy fuerte		9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5. Stem: color at the base					
(*)					
green					1
yellow	jaune	gelb	amarillo		2
orange	orange	orange	anaranjado		3
dark green					4
pinkish-red					5
purple-red					6
6. Stem: color of distal part					
(*)					
green					1
yellow	jaune	gelb	amarillo		2
orange	orange	orange	anaranjado		3
dark green					4
pinkish-red					5
purple-red					6
7. Stem: cross section					
(*)					
circular					1
flattened					2
8. Stem: ribs					
(*)					
absent	absentes	fehlend	ausentes		1
present	présentes	vorhanden	presentes		9
9. Stem: laterals (with inflorescentia)					
(*)					
absent	absentes	fehlend	ausentes		1
present	présentes	vorhanden	presentes		9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
10. Petiole: length					
(*)					
short	courte	kurz	corta		3
medium	moyenne	mittel	media		5
long	longue	lang	larga		7
11. Petiole: anthocyanin- coloration					
(*)					
absent	absentes	fehlend	ausentes		1
present	présentes	vorhanden	presentes		9
12. Leaf blade: length					
(*)					
short	courte	kurz	corta		3
medium	moyenne	mittel	media		5
long	longue	lang	larga		7
13. Leaf blade: width					
(*)					
narrow	étroite	schmal	estrecha		3
medium	moyenne	mittel	media		5
broad	large	breit	ancha		7
14. Leaf blade: shape					
(*)					
narrow elliptic					1
elliptic					2
ovate					3
broad ovate					4

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15. Leaf blade: shape of apex					
(*)					
acute					1
acuminate					2
long acuminate					3
16. Leaf blade: color					
(*)					
light green					1
middle green					2
dark green					3
green-reddish					4
17. Leaf blade: anthocyanin-coloration of main vein					
(*)					
absent	absent	fehlend	ausente		1
present	présent	vorhanden	presente		9
18. Leaf blade: blistering					
(*)					
absent or very weak	nulle ou très faible	fehlend oder sehr gering	ausente o muy débil		1
weak	faible	gering	débil		3
medium	moyenne	mittel	medio		5
strong	forte	stark	fuerte		7
very strong	très forte	sehr stark	muy fuerte		9
19. Leaf blade: undulation of margin					
(*)					
absent	absent	fehlend	ausente		1
present	présent	vorhanden	presente		9

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
20. Leaf blade:					
(*) curvature of longitudinal axis					
upwards					1
straight					2
downwards					3
21. Inflorescence: main					
(*) shape					
(+)					
spicate					1
panicle					2
cristate					3
other					4
22. Inflorescence:					
(*) length of main inflorescence					
short	courte	kurz	corta		3
medium	moyenne	mittel	media		5
long	longue	lang	larga		7
23. Inflorescence: width					
(*) of main inflorescence					
narrow	étroite	schmal	estrecha		3
medium	moyenne	mittel	media		5
broad	large	breit	ancha		7

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
24. Inflorescence: color					
(*)					
white	blanc	weiß	blanco		1
green					2
yellow	jaune	gelb	amarillo		3
orange	orange	orange	anaranjado		4
orange-pink					5
pink	rose	rosa	rosa		6
red	rouge	rot	rojo		7
purple					8
25. Inflorescence: color of prophylls on distal part (crystate group only)					
(*)					
white	blanc	weiß	blanco		1
green					2
yellow	jaune	gelb	amarillo		3
orange	orange	orange	anaranjado		4
orange-pink					5
pink	rose	rosa	rosa		6
red	rouge	rot	rojo		7
purple					8

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
26. Inflorescence: color (* of prophylls on the edge of the top (cristate group only)					
white	blanc	weiß	blanco		1
green					2
yellow	jaune	gelb	amarillo		3
orange	orange	orange	anaranjado		4
orange-pink					5
pink	rose	rosa	rosa		6
red	rouge	rot	rojo		7
purple					8
27. Inflorescence: (* degree of undulation (view from above: cristate group only)					
weak	faible	gering	débil		3
medium	moyenne	mittel	media		5
strong	forte	stark	fuerte		7
28. Tepal: shape (*					
elliptic					1
ovate					2
29. Tepal: color of median (*					
RHS Colour Chart (indicate reference number)					

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
30. Stamen: color of filament (*)					
white	blanc	weiß	blanco		1
green					2
yellow	jaune	gelb	amarillo		3
orange	orange	orange	anaranjado		4
orange-pink					5
pink	rose	rosa	rosa		6
red	rouge	rot	rojo		7
purple					8
31. Pistil: color of style (*)					
white	blanc	weiß	blanco		1
green					2
yellow	jaune	gelb	amarillo		3
orange	orange	orange	anaranjado		4
orange-pink					5
pink	rose	rosa	rosa		6
red	rouge	rot	rojo		7
purple					8

English	français	deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
32. Pistil: color of stigma (*)					
white	blanc	weiß	blanco		1
green					2
yellow	jaune	gelb	amarillo		3
orange	orange	orange	anaranjado		4
orange-pink					5
pink	rose	rosa	rosa		6
red	rouge	rot	rojo		7
purple					8

VIII. Explanations on the Table of Characteristics

Ad 21: Inflorescence: main shape

1
spicate

2
panicle

3
cristate

4
other

IX. Literature

X. Technical Questionnaire

	Reference Number (not to be filled in by the applicant)
<p>TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights</p>	
1. Species	<p><i>Celosia L.</i></p> <p>CELOSIA</p>
2. Applicant (Name and address)	
3. Proposed denomination or breeder's reference	

4. Information on origin, maintenance and reproduction of the variety

4.1 Origin

(a) Seedling (indicate parent varieties)

..... []

(b) Mutation (indicate parent variety)

..... []

(c) Discovery (indicate where and when)

..... []

(d) Other (specify)

..... []

4.2 Method of reproduction

- cuttings []

- seed []

- other (state method) []

4.3 Other information

5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the state of expression which best corresponds).

Characteristics	Example Varieties	Note
5.1 Plant: height (1)		
very short		1 []
short		3 []
medium		5 []
tall		7 []
very tall		9 []
5.2 Inflorescence: main shape (21)		
spicate		1 []
panicle		2 []
cristate		3 []
other		4 []
5.3 Inflorescence: color (24)		
white		1 []
green		2 []
yellow		3 []
orange		4 []
orange-pink		5 []
pink		6 []
red		7 []
purple		8 []

6. Similar varieties and differences from these varieties

Denomination of similar variety	Characteristic in which the similar variety is different ^{o)}	State of expression of similar variety	State of expression of candidate variety
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^{o)} In the case of identical states of expressions of both varieties, please indicate the size of the difference.

7. Additional information which may help to distinguish the variety

7.1 Resistance to pests and diseases

7.2 Special conditions for the examination of the variety

7.3 Other information

A representative color photo of the variety should be added to 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 that question is yes, please attach a copy of such an authorization.

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