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MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT

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**GERBERA - TEST GUIDELINES TO CONDUCT OF
DISTINCTNESS, UNIFORMITY AND STABILITY**

**Gerbera Varieties - Procedure to Conduct Tests for Distinctness,
Uniformity and Stability of Varieties**

HANOI - 2006



Translation provided by the EC-ASEAN Intellectual Property Rights Co-operation Programme (ECAP II)

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According to thereof:

Department of Science and Technology

Submission for approving by:

Department of Science and Technology

Approved by:

The Ministry of Agriculture and Rural Development (MARD)

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Ministry of Agriculture and Rural Development.



GERBERA GUIDELINES TO CONDUCT THE TESTS FOR DISTINCTNESS, UNIFORMITY AND STABILITY

(Attached by the Decision No 4100 QD/BNN-KHCN, on 29th December 2006 of Minister of Ministry of Agriculture and Rural Development)

1. Subject and scope for application

1.1 This Guidelines stipulated the principles, contents and methods for testing of distinctness (D), uniformity (U) and stability (S) - DUS Test, for all the new varieties belong to *Gerbera Cass, Compositea (Asteraceae)* family those are propagated by vegetative propagation methods.

1.2. This Guideline is applied to all varieties of Gerbera those registered by all domestic and foreigner Individuals and Organizations for Protection Certificate as well as for registering to the National List.

2. Definitions

In this Guideline, the following terminologies shall be understood as below:

2.1. *Candidate Variety*: is new variety which registered for DUS Test.

2.2. *Example Variety*: is a variety which is used as a standard for an expression status of certain characteristic.

2.3. *Similar Variety*: Is a variety in the same group and have many similar characteristics with candidate variety.

2.4. *Standard sample*: is a sample of a variety which has all characteristics same as the description has been recognized by authorization office.

2.5. *Typical characteristics*: are the genetic characteristics those remain unchanged after repeated propagation and its can be recognized and description in exactly.

2.6. *Off - type plant*: is a plant which is distinguishable with a candidate variety in at least one or some characteristics used in DUS Test Guidelines.

3. Material required for DUS Test

3.1. Candidate Variety

3.1.1 Number of limited material sample to be sent to DUS Test agency is 25 seedlings.

3.1.2 Seedlings for DUS Test must be good conditions and not infected by any dangerous diseases and insects.

3.1.3 Material for DUS Growing Test should not have undergone any treatment which would affect the expression of 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.

3.1.4 Duration for sending material: follow stipulation of DUS Test agency.

3.2. Similar varieties

3.2.1. The applicant can propose similar varieties in Technical Questionnaire and state the differences between Similar and Candidate varieties for DUS Test. DUS Test agency will consider of applicant's proposal and decide the variety for reference.

3.2.2. Reference varieties will be taken from the material of the DUS Test agency. In case of necessary DUS Test agency may request applicant supply material for reference and the applicant have to be responsible for the supplied material. Quantity and quality of the material of reference variety same as stipulated in column 3.1

4. Grouping of the variety for DUS Growing Test

Characteristics are used for grouping including:

- Flower head: type (Characteristic No 12)
- Outer ray floret: color of inner side (Characteristic No 31)
- Single or semi - double varieties only: dark disc (before opening of disc florets) (Characteristic No 42)

5. Testing methods

5.1. Testing duration

The minimum duration of DUS test should normally conducted in one growing circle. The DUS Growing Test need to be conducted in one more growing circles if the distinctness and uniformity are not clear determination.

5.2. Number of Testing place

The DUS test should normally be conducted at one place. If any characteristics of the variety which are relevant for the examination of the DUS Test cannot be observed at that place, the variety may be tested at an additional place.

5.3. Designation for DUS Growing Test

Two replicates and 20 plants for each variety in one replicate to be planted in DUS Growing Test.

5.4. Other technical measures



Normal Technical Cultivation Guidelines for Gerbera will be applied.

6. Description table for Expression Status of Characteristics

6.1. Description table for Gerbera varieties will be used for assessment of distinctness, uniformity and stability.

6.2. In the description table, asterisked characteristics (*) will be used during conduct of the test for all varieties and always exist in the description table except when the status of expression of a preceding characteristic or regional environmental conditions render this inappropriate. Expression status of the characteristic is given by nodes. Symbol (+) is given for the characteristic which is further explanation or illustration at annex 1. Type for observation of characteristic as following:

- 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 a single observation of a group of plans or parts of plants.

7. Assessment methods

7.1. For Distinctness

Distinctness is examined by the clear differences of each characteristic between candidate variety and reference variety.

VG characteristics: Candidate variety and reference variety are considered distinguishable when there are certain characteristics express in 2 clear difference status based on the limit distance which stipulated in this Guidelines.

VS and MS characteristic: The significant differences between candidate variety and reference variety will be based on the value of LSD at an acceptance probability of at least 95%.

MG characteristics: Will be considered as VG or VS and MS depend on the certain case.

7.2. To asses Uniformity and Stability

Gerbera is a vegetative propagated species so it is considered uniform and stable. Off - type plants are natural mutation or due to propagation by tissue culture.

7.2.1 All observations or measures must be carried out on at least 10 plants or parts of those 10 plants.

7.2.2 All observations must be conducted on the parts of 10 plants when the plant fully flowering unless there is indicates on other stage. The observation on leaf must be conducted on the biggest leaf at one third of the leaf.



7.2.3 Colour of the parts of plant are observed under artificial conditions or natural light at mid day but not allow direct sun. To use Colour Chart RHS on the base of white paper for examination of the colour.

7.5. The detail methods for examination of Distinctness, Uniformity and Stability of variety are applied follow “General Introduction to the examination of Distinctness, Uniformity and Stability and the development of Harmonized Descriptions of New Varieties of Plant” (UPOV-TG/1/3) and other relevant documents of International Union for the Protection of New Varieties of Plants (UPOV).

8. Report for the result of DUS Test

DUS Test agency must finish report of DUS Test not later than 60 days after DUS growing test finish.



Annex 1. Table of characteristics of Gerbera Varieties

Order	Characteristics	Expression status	Example Variety	Nodes
1. (*) MS	Leaf: length	Short Medium Long		3 5 7
2. (*) MS	Leaf: width	Narrow Medium Broad		3 5 7
3. (*) VG	Leaf blade: blistering	Absent or very weak Weak Medium Strong Very strong		1 3 5 7 9
4. (*) VG	Leaf blade: pubescence on upper side (midrib excluded)	Absent or very sparse Sparse Medium Dense Very dense		1 3 5 7 9
5. VG	Leaf blade: depth of incisions on the middle third	Shallow Medium Deep		3 5 7
6. VG	Leaf blade: green color of upper side	Light Medium Dark		3 5 7
7. VG	Leaf blade: shape of apex	Narrow acute Moderately acute Right angle Obtuse rounded		1 3 5 7 9
8. (*) MS	Peduncle: length	Short Medium Long		3 5 7
9. (*) VG	Peduncle: intensity of anthocyanin coloration at base	Absent or very weak Weak Medium Strong Very strong		1 3 5 7 9
10. VG	Peduncle: anthocyanin coloration at top	Absent Present		1 9
11. VG	Peduncle: bracts below involucre	Absent Present		1 9
12. (*)		Single		1



(+) VG	Flower head: type	Semi - double Double		2 3
13. (*) MS	Flower head: diameter	Very small Small Medium Large Very large		1 3 5 7 9
14. (+) MS	Semi-double or double varieties only: Flower head: diameter of mass of inner ray florets compared to that of flower head	Small Medium Large		3 5 7
15. (+) VG	Semi-double or double varieties only: flower head: border of mass of inner ray florets	Regular Irregular		1 2
16. MS	Flower head: height of involucre	Short Medium Tall		3 5 7
17. MS	Flower head: diameter of involucre	Small Medium Large		3 5 7
18. VG	Flower head: position of distal part of bracts in relation to outer ray florets	Apart Touching		1 9
19. (*) VG	Flower head: anthocyanin coloration at distal part of inner bracts	Absent Present		1 9
20. VG	Flower head: intensity of anthocyanin coloration at distal part of inner bracts	Weak Medium Strong		3 5 7
21. (+) VG	Outer ray floret: level of apex relative to top of involucre	Bellow Same level Above		1 2 3
22. (*) VG	Outer ray floret: shape	Narrow elliptic Narrow obovate		1 2
23. (*) VG	Outer ray floret: longitudinal axis	Strongly incurving Moderately incurving Straight Moderately reflexing Strongly reflexing		1 2 3 4 5
24. VG	Inner ray floret: longitudinal axis	Strongly incurving Moderately incurving Straight Moderately reflexing Strongly reflexing		1 2 3 4 5

25. (*) VG	Outer ray floret: profile in cross section in middle part of ray	Concave Straight convex		1 2 3
26. (*) MS	Outer ray floret: length	Very short Short Medium Long Very long		1 3 5 7 9
27. (*) MS	Outer ray floret: width	Narrow Medium Broad		3 5 7
28. VG	Outer ray floret: shape of apex	Pointed Rounded		1 2
29. VG	Outer ray floret: depth of incisions	Absent or very shallow Shallow Medium Deep Very deep		1 3 5 7 9
30. (+) VG	Outer ray floret: tendency to form long free petals	Absent Present		1 9
31. (*) VG	Outer ray floret: color of inner side	RHS Colour Chart (Indicate reference number)		
32. (*) VG	Outer ray floret: number of colors	One Two		1 2
33. VG	Single colored varieties only: outer ray floret only: distribution of color	None Lighter towards base Lighter towards top		1 2 3
34. VG	Outer ray floret: presence of striation	Absent Present		1 9
35. VG	Bi - colored varieties only: outer ray floret: secondary color at basal half	Absent Present		1 9
36. VG	Bi - colored varieties only: outer ray floret: secondary color at distal half	Absent Present		1 9
37. VG	Bi - colored varieties only: outer ray floret: secondary color at margin	Absent Present		1 9
38. VG	Bi - colored varieties only: outer ray floret: secondary color at tip	Absent Present		1 9
39. VG	Outer ray floret: secondary color	White Yellow Orange		1 2 3

		Pink		4
		Red		5
		Purple		6
40. VG	Outer ray floret: main color of outer side	White		1
		Yellow white		2
		Yellow green		3
		Green		4
		Yellow		5
		Orange		6
		Pink		7
		Red		8
		Purple		9
41. MS	Single or semi-double varieties only: disc: diameter	Small		3
		Medium		5
		Large		7
42. (*) VG	Single or semi- double varieties only: dark disc (before opening of disc florets)	Absent		1
		Present		9
43. (*) VG	Single varieties only: disc florets of outer rows: main color of perianth lobes	White		1
		Yellow		2
		Orange		3
		Pink		4
		Red		5
		Purple		6
		Brown		7
44. (*) VG	Semi-double and double varieties only: Disc florets of outer rows: main color of perianth lobes	RHS Colour Chart (indicate reference number)		
45. (*) VG	Disc: main color of perianth lobes of bisexual florets	White		1
		Yellow		2
		Orange		3
		Pink		4
		Red		5
		Purple		6
		Brown		7
46. (*) VG	Style: main color of distal part	White		1
		Yellow		2
		Orange		3
		Pink		4
		Red		5
		Purple		6
		Brown		7
		White		1

47. VG	Stigma: main color	Yellow Orange Pink Red Purple Brown		2 3 4 5 6 7
48. VG	Anther: main color	Yellow Orange Pink Red Purple Brown		1 2 3 4 5 6
49. VG	Anther: color of top relative to other parts	Lighter Same colour Darker		1 2 3
50. VG	Anther: longitudinal stripes	Absent Present		1 9
51. (*) VG	Pappas: color of top relative to other parts	Lighter Same colour Darker		1 2 3
52. VG	Pappas: level of top relative to closed disc florets	Below Same level Above		1 2 3

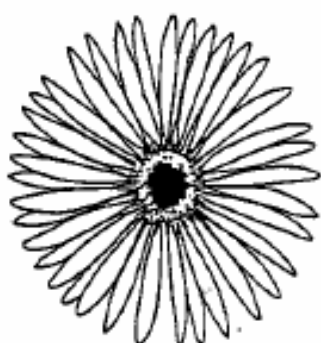
**ON BEHALF OF THE MINISTER
OF MINISTRY OF AGRICULTURE
AND RURAL DEVELOPMENT
VICE MINISTER**

Bui Ba Bong

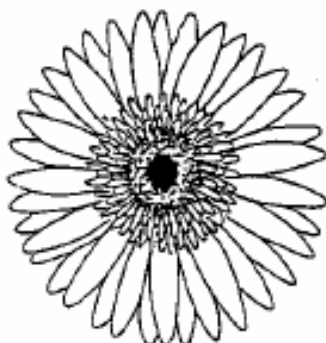


Annex 1. Explanation and illustration of some characteristics

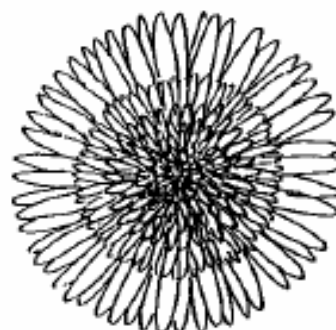
Char. No 12. Flower head: type



1
single

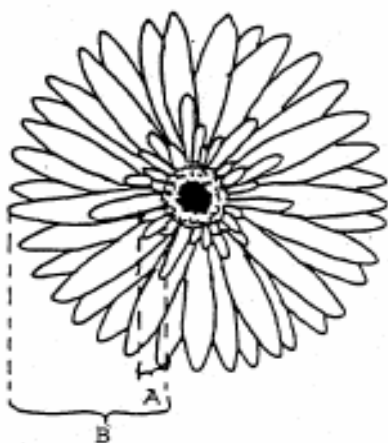


2
semi-double

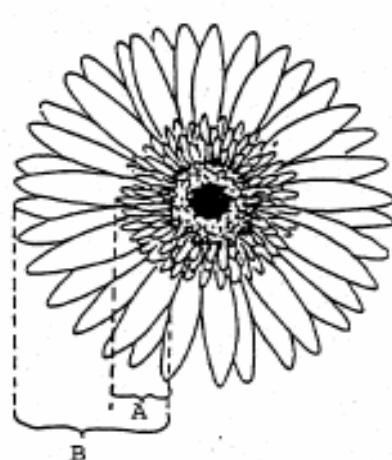


3
double

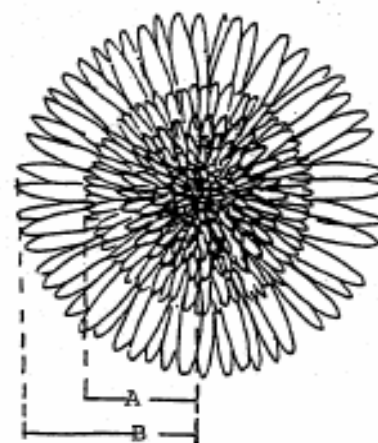
Char. No 14. Flower head: diameter of mass of inner ray florets (Semi-double or double varieties only)



3
small

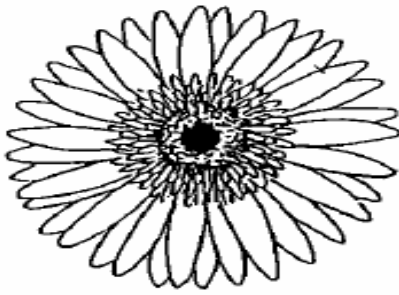


5
medium

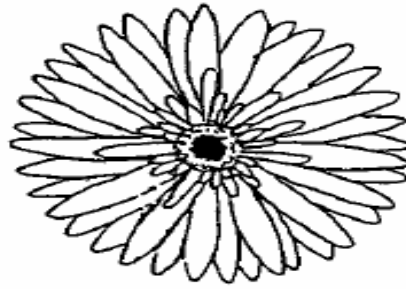


7
large

Char. No 15. Semi-double or double varieties only: flower head: border of mass of inner ray florets



1
regular



2
irregular

Char. No 21. Outer ray floret: level of apex relate to top of involucre



1
below

2
same level

3
above

Char. No 30. Outer ray floret: tendency to form long free petals



1
absent



9
present

8 Reference varieties and the differences between candidate variety and references varieties

- Reference variety name:
- The different characteristics with candidate variety

9 Other relevant information.

9.1 Diseases and insect tolerances

9.2 The special requirement on environment for DUS Test

9.3 Others

date Month year
(Signature and seal)

