

Plant		Florist chrysanthemum		493	Primary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Stem length	5 plants	Measurement	cm (integer)		Stem length at the flowering stage
2	Number of nodes	5 plants	Measurement	nodes (integer)		Number of nodes at the flowering stage
3	Stalk length of terminal flowers	5 plants	Measurement	mm (integer)		Stalk length of terminal flowers
4	Number of flowers	5 plants	Measurement	flowers (integer)		Number of flowers on a stem
5	Date of flowering	Block	Observation	date		Date when terminal flowers of 80% of stems have bloomed in the block
6	Leaf margin serration	5 plants	Measurement	1:<=0.09 2:0.10-0.29 3:0.30-0.69 4:0.70-0.89 5:>=0.90		Measure the 10th leaf basipetally from the flag leaf
7	Number of ray florets	5 flowers	Measurement	florets (integer)		
8	Number of tubular florets	5 flowers	Measurement	florets (integer)		
9	Petal shape (I)	5 flowers	Observation	1:Straight 9:Others		Others are subdivided into the next item
10	Petal shape (II)	5 flowers	Observation	0:Incurved 1:Gutter shaped 2:Piped type 1 3:Piped type 2 4:Spatulate 5:Reflexed type 1 6:Reflexed type 2 7:Dentate 8:Anemone type 9:Others		Piped type 1:flat tip, piped type 2:curved tip, reflexed type 1:loosely reflexed, reflexed type 2:tightly reflexed
11	Number of tubulous flowers	5 flowers	Measurement	1:<=29 mm 2:30-49 mm 3:50-49 mm 4:70-89 mm 5:90-109 mm 6:110-149 mm 7:150-199 mm 8:200-249 mm 9:>=250 mm		Measure at the full flowering stage
12	Petal color of ray floret	5 flowers	Observation			Indicate reference number of RHS color chart

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1	Plant type	5 plants	Observation	3:Erect 5:Semi-erect 7:Prostrate		
2	Plant height	5 plants	Observation	1:Dwarf 3:Tall		
3	Dwarf type	5 plants	Observation	1:Type 1 3:Type 2		Type 1: without internode elongation. Type 2:repeated branching forming a globe
4	Plant height at flowering stage	5 plants	Observation	3:Low 5:Intermediate 7:High		
5	Number of lateral buds	5 plants	Observation	1:None or very few 3:Few 5:Intermediate 7:Many		
6	Branching after decapitation	5 plants	Observation	3:Few 5:Intermediate 7:Many		
7	Number of lateral buds at leaf axil	5 plants	Observation	0:One 9:Two or more		
8	Position of lateral buds	5 plants	Observation	1:Normal 9:High		High: lateral bud(s) above to leaf axil
9	Stem diameter	5 plants	Measurement	1:<=3.9 mm 2:4-5.9 mm 3:6-7.9 mm 4:>=8 mm		Measure at one third from the top of plant height
10	Internode length	5 plants	Measurement	1:<=9 mm 2:10-19 mm 3:20-29 mm 4:30-39 mm 5:40-49 mm 6:>=50 mm		Average of 5th leaf through 15th leaf basipetally from the flag leaf
11	Vertical grooves on stem surface	5 plants	Observation	3:Low 5:Intermediate 7:High		
12	Stem strength	5 plants	Observation	3:Weak 5:Intermediate 7:Tough		Observe degree of stem hanging by keeping stem horizontally
13	Stem color	5 plants	Observation	1:Light green 2:Green 3:Brown 4:Light brown 5:Purplish brown 6:Reddish purple 7:Purple 9:Others		Observe the 10th leaf basipetally from the flag leaf

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14	Stem zigzag bend	5 plants	Observation	0:Absent 9:Present		
15	Diameter of flower stalk	5 flowers	Measurement	1:<0.9 mm 2:1.0-1.9 mm 3:2.0-2.9 mm 4:3.0-3.9 mm 5:4.0-4.9 mm 6:5.0-5.9 mm 7:6.0-6.9 mm 8:7.0-7.9 mm 9:>8.0 mm		Measure the widest diameter at one third distance from flower stalk top
16	Sprouting angle of flower stalk	5 plants	Measurement	3:<=29 4:30-39 5:40-49 6:50-59 7:>=60		
17	Frequency of secondary lateral buds	5 plants	Measurement	1:0-24% 2:25-49% 3:50-74% 4:75-99%		
18	Leaf length	5 leaves	Measurement	1:<=24 mm 2:25-49 mm 3:50-74 mm 4:75-99 mm 5:100-124 mm 6:125-149 mm 7:150-199 mm 8:>=200 mm		Measure the tenth leaf basipetally from the flag leaf (petiole is excluded)
19	Leaf width	5 leaves	Measurement	1:<=9 mm 2:10-24 mm 3:25-49 mm 4:50-74 mm 5:75-99 mm 6:100-124 mm 7:125-149 mm 8:>=150 mm		Measure the 10th leaf basipetally from the flag leaf
20	Length/width ratio of leaf	5 leaves	Measurement	1:<=0.79 2:0.8-1.19 3:1.2-1.59 4:1.6-1.99 5:>=2		Ratio of leaf length to width at the 10th leaf
21	Shape of leaf bottom	5 leaves	Observation	3:Emarginate 5:Plain 7:Convex		Observe the 10th leaf basipetally from the flag leaf
22	Shape of leaf tip	5 leaves	Observation	3:Acuminate 5:Acute 7:Obtuse		Observe the 10th leaf basipetally from the flag leaf
23	Petiole length/(leaf length + petiole length)	5 leaves	Measurement	1:<0.19 2:0.2-0.24 3:>0.25		
24	Secondary serration of leaf	5 leaves	Observation	1:Very slight 3:Slight 5:Intermediate 7:Severe		Observe the 10th leaf basipetally from the flag leaf
25	Base shape of primary lobation	5 leaves	Observation	3:Acute 5:Intermediate 7:Round		Observe the 10th leaf basipetally from the flag leaf

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26	Claw in the base of sinus	5 leaves	Observation	0:None 9:Present		Observe the 10th leaf basipetally from the flag leaf
27	Margins of sinus between lobes	5 leaves	Observation	3:Diverging 5:Parallel 7:Converging		Observe the 10th leaf basipetally from the flag leaf
28	Leaf color on the adaxial side	5 leaves	Observation	3:Pale 5:Intermediate 7:Dark		Observe the 10th leaf basipetally from the flag leaf at flowering stage
29	Leaf color on the abaxial side	5 leaves	Observation	3:Pale 5:Intermediate 7:Dark		Observe the 10th leaf basipetally from the flag leaf at flowering stage
30	Leaf glossiness	5 leaves	Observation	3:Weak 5:Intermediate 7:Strong		Observe the 10th leaf basipetally from the flag leaf at flowering stage
31	Leaf thickness	5 leaves	Measurement	3:<=0.39 mm 5:0.49-0.59 mm 7:>=0.60 mm		Measure the 10th leaf basipetally from the flag leaf at flowering stage
32	Attaching angle of petiole to stem	5 leaves	Measurement	3:<=-16 5:-15-+15 7:>=+15		Measure the angle of petiole base and blade base at the 10th leaf from the flag leaf
33	Attaching angle of leaf to stem	5 leaves	Measurement	3:<=-16 5:-15-+15 7:>=+15		Measure the angle of petiole base and blade top at the 10th leaf from the flag leaf
34	Curvature of leaf blade	5 leaves	Observation	3:Upwards 5:Horizontal 7:Downwards		Observe the 10th leaf basipetally from the flag leaf at flowering stage
35	Leaf unevenness	5 leaves	Observation	3:Weak 5:Intermediate 7:Strong		Observe the 10th leaf basipetally from the flag leaf at flowering stage
36	Existence of stipule	5 plants	Observation	3:Almost none 5:Half present 7:Mostly present		Evaluate the typical type
37	Distribution of stipule	5 plants	Observation	3:Mostly on one side 5:Mixed 7:Mostly on both sides		Evaluate the typical type
38	Shape of stipule	5 plants	Observation	3:Not lobar 5:Dual-lobar 7:3 or 4 lobar		Evaluate the typical type

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39	Size of stipule	5 plants	Observation	3:Small 5:Intermediate 7:Large		Evaluate the typical type
40	Color of sucker	5 plants	Observation	1:White 2:Pale yellow brown 3:Pale pink 4:Reddish purple 5:Purple 9:Other		Observe the winter sucker under the ground
41	Shape of buds	5 flowers	Measurement	1:<=0.94 2:0.95-1.04 3:>=1.05		Measure just before involucre opening (ratio:height/diameter)
42	Flower type	5 flowers	Observation	1:No ray floret 2:Up to 1.5 rays 3:2 to 4 rays 4:Over 5 rays type 1 5:Over 5 rays type 2 6:Over 5 rays type 3		Type 1:open center at harvest, type 2:open center at full anthesis, type 3:not exposed
43	Diameter of tubulous flower part	5 flowers	Measurement	1:<=9 mm 2:10-14 mm 3:15-19 mm 4:20-24 mm 5:25-29 mm 6:30-39 mm 7:40-49 mm 8:50-59 mm 9:>=60 mm		Observe for the cultivar with open center by anthesis
44	Distribution of tubulous flowers	5 flowers	Observation	1:Centered 9:Sparse		
45	Length of tubulous flowers	5 flowers	Measurement	1:<=4.9 mm 2:5.0-5.9 mm 3:6.0-6.9 mm 4:7.0- 7.9 mm 5:8.0-8.9 mm 6:9.0-9.9 mm 7:>=10.0 mm		Include pistil and ovary
46	Shape of petal tip in ray floret	5 flowers	Observation	1:Acute 2:Round 3:Dentate 4:With mucro		
47	Longitudinal axis of outer ray floret	5 flowers	Observation	1:Straight 2:Reflexed 3:Incurved 4:Twisted 5:Broken 6:Drooping		Observe the longitudinal direction to select the typical rank
48	Longitudinal axis of inner ray floret	5 flowers	Observation	1:Straight 2:Reflexed 3:Incurved 4:Twisted 5:Broken 6:Drooping		Observe the longitudinal direction to select the typical rank
49	Length of ray floret petal	5 flowers	Measurement	1:<=9 mm 2:10-19 mm 3:20-29 mm 4:30-39 mm 5:40-49 mm 6:50-69 mm 7:70-89 mm 8:90-109 mm 9:>=110 mm		Measure the outermost ray floret petal
50	Width of ray floret petal	5 flowers	Measurement	1:<=1.9 mm 2:2.0-4.9 mm 3:5.0-9.9 mm 4:10.0- 14.9 mm 5:15.0-19.9 mm 6:20.0-29.9 mm 7:30.0-39.9 mm 8:>=40.0 mm		Measure the outermost ray floret petal in natural condition

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51	Angle of outer ray floret	5 flowers	Measurement	1:<=-31 2:-30 - -16 3:-15 - +15 4:>=16		Measure at the full flowering stage
52	Angle of outer ray floret at the beginning of flowering time	5 flowers	Measurement	1:<=+15 2:+16 - +30 3:+31 - +45 4:>=+46		For cut, observe at harvest stage. For others, observe when the outermost rays elongate and expand.
53	Length from involucre to the top of flower	5 flowers	Measurement	1:<=9 mm 2:10-19 mm 3:20-29 mm 4:30-39 mm 5:40-49 mm 6:50-59 mm 7:60-79 mm 8:80-99 mm 9:>=100 mm		Measure at the full flowering time
54	Position of involucre	5 flowers	Measurement	1:Normal 9:Attached among florets		
55	Diameter of involucre	5 flowers	Measurement	1:<9 mm 2:10-19 mm 3:20-29 mm 4:30-39 mm 5:40-49 mm 6:>50 mm		Measure at the full flowering in natural condition
56	Coloration on top side of ray floret	5 flowers	Observation	1:Uniform 2:Variegated on top 3:Mottled 4:Striped 5:Variegated on bottom 6:White or pale bottom 7:Other		
57	Color of ray floret petal	5 flowers	Observation			Indicate reference number of RHS color chart
58	Color at the flower center	5 flowers	Observation	1:Same as outermost 9:Not same as outermost		Only for double or anemone type. Rank 9 is subdivided in the next item.
59	Color at the flower center	5 flowers	Observation	0:Pink 1:Purple 2:Red 3:Orange 4:Pale yellow 5:Yellow 6:Yellow green 7:Green 8:Brown 9:White		
60	Color of flower disk	5 flowers	Observation	1:Green 2:Yellow green 3:Yellow 4:Brown 9:Other		For open center cultivars, observe center before dehiscence
61	Diameter of receptacle	5 flowers	Measurement	1:<=4.9 mm 2:5.0-7.4 mm 3:7.5-9.9 mm 4:10.0-12.4 mm 5:12.5-14.9 mm 6:15.0-17.4 mm 7:17.5-29.9 mm 8:20.0-24.9 mm 9:>=25 mm		

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62	Shape of receptacle	5 flowers	Observation	1:Dome type 1 2:Dome type 2 3:Conical type 1 4:Conical type 2		Dome type 1:flat dome, dome type 2:convex dome, conical type 1:flat conical, conical type 2:convex conical
63	Shape of inflorescence	5 plants	Observation	1:Concave 2:Flat 3:Conical 4:Cylindrical		Observe by keeping lateral buds until

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1	Response period to short day treatment	5 plants	Measurement	weeks (round to the 1st decimal place)		Weeks from the start of short day treatment to anthesis
2	Rosetting	5 plants	Observation	2:Very weak 3:Weak 4:Slightly weak 5:Intermediate 6:Slightly strong 7:Strong 8:Very strong		Observe under low temperature and short day conditions
3	Flowering ability under low temperature	5 plants	Observation	2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high		
4	Flowering ability under high temperature	5 plants	Observation	2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high		Delay of flowering under high temperature
5	Resistance to white rust	5 plants	Observation	2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high		
6	Juvenility	5 plants	Observation	2:Very weak 3:Weak 4:Slightly weak 5:Intermediate 6:Slightly strong 7:Strong 8:Very strong		

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No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Critical day length	5 plants	Measurement	hour (round to the 1st decimal place)		Critical day length under the optimal temperature
2	Optimum critical day length	5 plants	Measurement	hour (round to the 1st decimal place)		Optimum critical day length under the optimal temperature
3	Position of crown bud	5 plants	Observation	3:Low 5:Intermediate 7:High		Observe under long day condition
4	Stem elongation under low temperature	5 plants	Observation	2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly low 7:High 8:Very high		
5	Freezing tolerance	5 plants	Observation	2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high		
6	Tolerance to winter exposure	5 plants	Observation	2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high		
7	Anthocyanin development under low temperature	5 plants	Observation	0:Absent 9:Present		Observe anthocyanin pigmentation under low temperature for white on yellow flowers
8	Anthocyanin discoloration under high temperature	5 plants	Observation	0:Absent 9:Present		Observe anthocyanin discoloration under high temperature for red or pink cultivars
9	Disease resistance	5 plants	Observation	2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high		Resistance to diseases other than white rust
10	Pest resistance	5 plants	Observation	2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high		
11	Tolerance to excessive moisture	5 plants	Observation	2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high		

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12	Tolerance to high planting density	5 plants	Observation	2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high		
13	Tolerance to drought	5 plants	Observation	2:Very low 3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High 8:Very high		

Plant	Florist chrysanthemum		493	Tertiary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Yield	Block	Measurement	Per square meter (integer)	
2	Cut flower longevity	5 stems	Observation	2:Very poor 3:Poor 4:Slightly poor 5:Intermediate 6:Slightly good 7:Good 8:Very good	
3	Propagating ability	Block	Observation	1:Easy 9:Difficult	

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No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Fragrance	5 plants	Sensory	0:Absent 9:Present	