

Plant		Dianthus		451	Primary essential character
No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Plant height at the flowering time	5 plants	Measurement	1:<=4.9 cm 2:5.0-9.9 cm 3:10.0-19.9 cm 4:20.0-29.9 cm 5:30.0-39.9 cm 6:40.0-59.9 cm 7:60.0-79.9 cm 8:80.0-99.9 cm 9:>=100 cm	Average of 5 plants
2	Maximum leaf length	5 plants	Measurement	1:<=19 mm 2:20-39 mm 3:40-59 mm 4:60-79 mm 5:80-99 mm 6:100-129 mm 7:130-159 mm 8:160-199 mm 9:>=200 mm	Average of 5 plants. Measure the maximum leaf length in a shoot
3	Maximum leaf width	5 plants	Measurement	1:<=2.9 mm 2:3.0-5.9 mm 3:6.0-8.9 mm 4:9.0-11.0 mm 5:12.0-17.9 mm 6:18.0-23.9 mm 7:24.0-29.9 mm 8:30.0-39.9 mm 9:>=40.0 mm	Average of 5 plants. Measure width of leaf whose length is the maximum in a shoot
4	Flower cluster shape	5 plants	Observation	1:Solitary flower 3:Lateral flower 5:Capitulum	Scale 5:Ratio of flower cluster formation is over 50%.
5	Diameter of flower spike	5 plants	Measurement	1:<=4.9 cm 2:5.0-9.9 cm 3:10.0-14.9 cm 4:15.0-19.9 cm 5:>=20.0 cm	Examine <i>D. barbatus</i> , <i>D. japonicus</i> and <i>D. carthusianorum</i>
6	Classification of flower form	5 plants	Observation	3:Single 5:Double	Observe at flowering stage
7	Number of petals	5 flowers	Measurement	1:5.0-5.9 2:6.0-9.9 3:10.0-14.9 4:15.0-19.9 5:20.0-29.9 6:>=30.0	Average of 5 flowers
8	Top view of flower	5 flowers	Observation	1:Circular 2:Stellate 3:Calicinus 4:Isensis type	Examine only single flowers
9	Flower diameter	5 flowers	Measurement	1:<=0.9 cm 2:1.0-1.9 cm 3:2.0-2.9 cm 4:3.0-3.9 cm 5:4.0-4.9 cm 6:5.0-5.9 cm 7:6.0-6.9 cm 8:7.0-7.9 cm 9:>=8.0 cm	Average of 5 flowers. Measure flower diameter as it is.
10	Petal color	5 flowers	Measurement		RHS color chart (indicate reference number)
11	Coloration pattern	5 flowers	Observation	0:Blend 1:Single 2:Margined 3:Bull's eye 4:Dark eye 5:Pale eye 6:Striated 7:Speckled 8:Gradating 9:Other	Observe at flowering stage

Plant		Dianthus		451	Primary optional character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Plant type	5 shoots	Observation	1:Erect 9:Semi-erect		Semi-erect: not erect without support
2	Longest internode length	5 shoots	Measurement	1:<=0.9 cm 2:1.0-1.9 cm 3:2.0-2.9 cm 4:3.0-3.9 cm 5:4.0-4.9 cm 6:5.0-5.9 cm 7:6.0-7.9 cm 8:8.0-9.9 cm 9:>=10.0 cm		Measure the longest internode length in a shoot. Average of 5 plants
3	Number of nodes	5 shoots	Measurement	1:<=5.9 2:6.0-7.9 3:8.0-9.9 4:10.0-11.9 5:12.0-13.9 6:14.0-15.9 7:16.0-17.9 8:18.0-19.9 9:>=20.0		Average of 5 plants at flowering time
4	Stem diameter	5 plants	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		(mm)
5	Stem color (I)	5 plants	Observation	1:Light green 2:Green 3:Grey green 4:Light green+Purple 5:Green+Purple 6:Grey green+Purple 7:Purple 9:Other		At a point 1/2 of plant height (Grey green leaf has waxes)
6	Stem color (II)	5 plants	Observation	1:Light green 2:Green 3:Grey green 4:Light green+Purple 5:Green+Purple 6:Grey green+Purple 7:Purple 9:Other		At a point one-eighth of plant height above ground (Grey green leaf has waxes)
7	Node color (I)	5 plants	Observation	1:Light green 2:Green 3:Grey green 4:Light green+Purple 5:Green+Purple 6:Grey green+Purple 7:Purple 9:Other		At a point 1/2 of plant height(Grey green leaf has waxes)
8	Node color (II)	5 plants	Observation	1:Light green 2:Green 3:Grey green 4:Light green+Purple 5:Green+Purple 6:Grey green+Purple 7:Purple 9:Other		At a point one-eighth of plant height above ground (Grey green leaf has waxes)
9	Number of stems	5 plants	Measurement	3:Few 5:Intermediate 7:Many		Examine the number of primary scaffold branches from lower node, only for cut flowers
10	Shape of leaf tip	5 plants	Observation	3:Rotundate 5:Obtuse 7:Acute 9:Acuminate		Observe at flowering stage
11	Ratio of length and width in leaf	5 plants	Measurement	1:<=2.9 2:3.0-4.9 3:5.0-6.9 4:7.0-9.9 5:10.0-14.0 6:15.0-19.9 7:20.0-24.9 8:25.0-29.9 9:>=30.0		Maximum length/maximum width in leaf
12	Adaxial leaf color	5 plants	Observation	1:Very light 3:Light 5:Intermediate 7:Dark		Examine the degree of greenness
13	Abaxial leaf color	5 plants	Observation	1:Very light 3:Light 5:Intermediate 7:Dark		Observe at flowering stage

Plant		Dianthus		451	Primary optional character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
14	Anthocyanin coloration on leaves (I)	5 plants	Observation	0:Absent 3:Weak 5:Intermediate 7:Strong		At a point 1/2 of plant height
15	Anthocyanin coloration on leaves (II)	5 plants	Observation	0:Absent 3:Weak 5:Intermediate 7:Strong		At a point one-eighth of plant height above ground
16	Leaf variegation	5 plants	Observation	0:Absent 9:Present		Observe at flowering stage
17	Variegated color	5 plants	Observation	1:White 2:Light green 3:Yellow 4:Reddish purple		For variegated varieties
18	Degree of leaf variegation	5 plants	Observation	3:Low 5:Intermediate 7:High		For variegated varieties
19	Leaf waxiness	5 plants	Observation	0:Absent 3:Weak 5:Intermediate 7:Strong		Appearance of leaf waxiness
20	Leaf gloss	5 plants	Observation	3:Weak 5:Intermediate 7:Strong		Appearance of leaf gloss
21	Number of flowers on stem (I)	5 plants	Measurement	1:<=19 2:20-39 3:40-59 4:60-79 5:80-99 6:100-119 7:120-139 8:140-159 9:>=160		Average of flower buds on the main stem (5 plants) (for Dianthus barbatus, D. japonicus)
22	Number of flowers on stem (II)	5 plants	Measurement	1:<=1.9 2:2.0-4.9 3:5.0-9.9 4:10.0-14.9 5:15.0-19.9 6:20.0-29.9 7:30.0-39.9 8:40.0-49.9 9:>=50.0		Average of flower buds on the main stem (5 plants) (for Dianthus barbatus, D. japonicus)
23	Length of calyx tube	5 flowers	Measurement	1:<=4.9 mm 2:5.0-9.9 mm 3:10.0-14.9 mm 4:15.0-19.9 mm 5:20.0-24.9 mm 6:25.0-29.9 mm 7:30.0-34.9 mm 8:35.0-39.9 mm 9:>=40.0 mm		At least 2 calyx tubes per plant. Average of 5 plants
24	Diameter of calyx tube	5 flowers	Measurement	1:<=1.9 mm 2:2.0-2.9 mm 3:3.0-4.9 mm 4:5.0-6.9 mm 5:7.0-9.9 mm 6:10.0-12.9 mm 7:13.0-15.9 mm 8:16.0-19.9 mm 9:>=20.0 mm		At least 2 calyx tubes per plant. Average of 5 plants
25	Ratio of length to diameter of calyx tube	5 flowers	Measurement	1:<=1.99 2:2.00-2.49 3:2.50-2.99 4:3.00-3.49 5:3.50-3.99 6:4.00-4.49 7:4.50-4.99 8:5.00-5.49 9:>=5.50		Length/diameter of calyx tube
26	Color of calyx tube	5 flowers	Observation	1:Light green 2:Green 3:Grey green 4:Light green+Purple 5:Green+Purple 6:Grey+Purple 7:Purple		Examine at the full flowering time

Plant		Dianthus		451	Primary optional character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
27	Shape of bracts	5 flowers	Observation	1:Type I 2:Type II 3:Type III 4:Type IV 5:Type V 6:Type VI		Observe at flowering stage
28	Degree of closing bract with calyx tube	5 flowers	Observation	3:Close 5:Intermediate 7:Separation		Whether the middle of bract is close with calyx tube or not
29	Number of bracts	5 flowers	Measurement	1:2 2:4 3:>=6		Observe at flowering stage
30	Ratio of length (bract and calyx tube)	5 flowers	Measurement	1:<1/4 2:1/4-1/2 3:1/2-3/4 4:3/4-1 5:1-3/2 6:>3/2		Length of bract/length of calyx tube
31	Petal length	5 flowers	Measurement	1:<=4.9 mm 2:5.0-9.9 mm 3:10.0-14.9 mm 4:15.0-19.9 mm 5:20.0-24.9 mm 6:25.0-29.9 mm 7:30.0-39.9 mm 8:40.0-49.9 mm 9:>=50.0 mm		Measure extend petal (including the foundation of petal in calyx tube)
32	Petal width	5 flowers	Measurement	1:<=2.9 mm 2:3.0-5.9 mm 3:6.0-9.9 mm 4:10.0-14.9 mm 5:15.0-19.9 mm 6:20.0-24.9 mm 7:25.0-29.9 mm 8:30.0-39.9 mm 9:>=40.0 mm		Average of 5 flowers
33	Petal tip serration: depth	5 flowers	Observation	1:Absent or very shallow 3:Shallow 5:Intermediate 7:Deep 9:Very deep		Observe at flowering stage
34	Petal thickness	5 flowers	Measurement	3:Thin 5:Intermediate 7:Thick		Thin:<=0.19 mm, intermediate:0.20-0.24 mm, thick:>=0.25 mm
35	Surface of petal blade	5 flowers	Observation	3:Low 5:Intermediate 7:High		Observe at flowering stage
36	Petal overlapping	5 flowers	Observation	3:None 5:Some 7:Much		Observed only single flower type
37	Ratio of marking color	5 plants	Measurement	1:<=5 2:6-10 3:11-20 4:21-30 5:31-40 6:>=41		Rate of color except main color, if there is the difference of flower color between plants
38	Length of pistils	5 flowers	Measurement	1:<=9.9 mm 2:10.0-14.9 mm 3:15.0-19.9 mm 4:20.0-24.9 mm 5:25.0-29.9 mm 6:30.0-34.9 mm 7:>=35.0 mm		Measured at the full flowering time
39	100 seed weight	5 plants	Measurement	mg (rounded to the whole number) (integer)		(mg)

Plant		Dianthus		451	Secondary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Flowering habit	5 plants	Observation	1:One season flowering 5:Two season flowering 9:Perpetual		Observe at flowering stage
2	Earliness of flowering	5 plants	Observation	1:Very early 3:Early 5:Intermediate 7:Late		Classified earliness of flowering in the same variety group
3	Wilting disease resistance	10 plants	Observation	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High		Resistance to bacterial wilt

Plant		Dianthus		451	Secondary optional character	
No	Characters	No. of samples	Methods	Rank or measurement unit		Remarks
1	Degree of calyx splitting	5 plants	Observation	3:Low 5:Intermediate 7:High		Observe at flowering stage
2	Type of propagation	5 plants	Observation	1:Seed 9:Clone		Observe at flowering stage
3	Type of cultivation	5 plants	Observation	1:Open field 2:Protected cultivation 3:Both		Observe at flowering stage
4	Flowering within the year at spring sowing	5 plants	Observation	0:Absent 9:Present		Seed propagation type:examine cultivar for spring seeding (in April), clone propagation type:examine cultivar for spring cutting (in February or March)
5	High temperature tolerance	5 plants	Observation	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High		Seed propagation type:examine only cultivars for spring seeding, clone propagation type:cutting in February.
6	Cold hardiness	5 plants	Observation	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High		Seed propagation type:seeding in September, clone propagation type:cutting in September
7	Spotting disease resistance	5 plants	Observation	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High		Observe the degree of disease occurrence.
8	Viral disease resistance	5 plants	Observation	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High		Observe the degree of disease occurrence.
9	Mite resistance	5 plants	Observation	3:Low 4:Slightly low 5:Intermediate 6:Slightly high 7:High		Observe the degree of occurrence.
10	Polyploidy	1 plant	Measurement	2:2x 3:3x 4:4x 5:5x 6:6x		Estimation of polyploidy levels by flow cytometry

Plant	Dianthus		451	Tertiary essential character	
No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Flower longevity	5 plants	Observation	3:Poor 5:Intermediate 7:Excellent	Floret longevity for potted plants and plants raised in the field.

Plant	Dianthus		451	Tertiary optional character	
No	Characters	No. of samples	Methods	Rank or measurement unit	Remarks
1	Fragrance	5 plants	Sensory	3:Absent or weak 5:Intermediate 7:Strong	Smell flowers all together at the full flowering time