

1. Germplasm Conservation and Evaluation

Project No.1.4.1: Collection, evaluation and Maintenance of Germplasm of Chrysanthemum.

Table 1.4.1a: Agrometric characters of different chrysanthemum collections

Name of the genotypes	Plant height (cm)	No. branches/plant		Weight of loose flower/plant (g)	Days taken to first bud appearance after planting	Number of flowers /plant	Diameter of flower (cm)
		Primary	Secondary				
	1	2		3	4	5	6
BCC-1	27.0	1.0	4.5	143	46.5	123.0	4.1
BCC-2	70.0	1.0	15.0	388	63.5	127.5	7.4
BCC-3	73.8	1.0	11.5	1067	42.0	155.5	5.0
BCC-4	69.5	2.0	15.0	1334	51.5	580.0	5.4
BCC-5	74.7	3.5	12.0	2150	60.5	433.5	5.1
BCC-6	39.5	1.0	4.5	121	26.0	40.0	4.2
BCC-7	40.5	1.0	3.5	78	26.0	27.5	4.5
BCC-8	41.7	1.5	6.5	603	36.5	124.5	5.1
BCC-9	51.8	2.0	6.5	273	28.0	106.5	5.1
BCC-10	61.5	1.0	9.0	523	33.5	43.0	9.3
BCC-11	59.8	1.0	7.5	307	41.0	58.5	8.6
BCC-12	56.6	1.5	7.0	394	36.0	133.0	4.6
BCC-13	66.6	1.5	20.5	975	50.5	502.5	6.0
BCC-14	53.2	1.0	8.5	395	46.5	152.0	4.4
BCC-15	42.4	1.5	12.0	578	44.0	214.0	3.3
BCC-16	61.2	1.5	12.5	424	40.5	176.5	6.2
BCC-17	82.2	1.5	14.5	623	55.5	213.5	6.3
BCC-18	60.6	1.0	13.0	365	36.0	182.5	6.1
BCC-19	55.8	2.0	13.0	548	33.5	179.0	5.3
BCC-20	39.5	1.5	19.0	1646	52.0	490.0	5.0
BCC-21	58.5	1.0	5.0	612	51.0	226.5	4.5
BCC-22	74.3	3.0	12.0	981	43.5	261.0	8.0
BCC-23	49.7	1.0	14.0	1917	58.0	484.0	3.6
BCC-24	39.4	2.0	16.0	1763	60.5	436.5	4.7
BCC-25	32.2	1.0	11.0	653	43.0	129.0	4.2
BCC-26	59.0	2.0	1.5	821	42.0	186.5	8.0
BCC-27	75.7	1.5	9.0	1154	54.0	229.0	5.7
BCC-28	63.9	1.0	8.0	969	49.5	448.5	5.3
BCC-29	66.3	1.0	12.0	1133	43.0	236.0	5.7
BCC-30	52.1	2.0	9.5	784	50.5	169.0	8.0
BCC-31	49.5	1.5	18.0	1756	60.0	820.5	4.2
BCC-32	61.7	1.0	9.5	662	41.0	216.5	4.9
BCC-33	58.3	1.5	0.0	1583	50.5	316.5	6.4
BCC-34	77.5	1.0	13.0	2105	45.0	284.5	5.8
BCC-35	60.7	1.0	10.0	1017	60.0	368.5	5.2
BCC-36	64.8	1.0	10.0	1234	74.5	434.5	8.2
BCC-37	32.2	1.0	11.0	409	48.5	386.0	5.1
BCC-38	60.0	1.0	11.0	471	57.5	368.0	5.2
BCC-39	60.4	1.0	9.0	634	54.0	141.5	5.7
BCC-40	55.4	1.0	8.0	621	51.5	135.0	5.6
BCC-41	50.4	1.0	9.0	710	46.5	216.5	4.6
BCC-42	53.5	1.0	14.0	361	40.5	251.0	6.0
BCC-43	41.5	1.0	13.5	635	50.5	496.0	4.7
BCC-44	41.1	1.0	5.5	515	35.0	224.0	5.4
BCC-45	40.1	1.5	3.0	430	37.0	199.0	5.4
BCC-46	67.8	1.0	16.5	915	43.0	88.0	10.4

BCC-47	59.5	1.0	6.5	720	37.5	73.5	10.3
BCC-48	36.1	1.0	13.5	666	63.5	574.0	4.5
BCC-49	52.2	1.5	14.5	729	53.5	202.5	5.2
BCC-50	35.6	1.0	1.5	245	36.5	141.0	6.1
BCC-51	45.2	1.5	10.5	968	45.0	281.5	3.4
BCC-52	50.6	1.5	14.5	1543	61.5	334.0	7.0
BCC-53	61.2	1.0	8.0	788	42.5	181.5	4.6
BCC-54	44.4	2.0	9.0	681	42.0	227.0	5.7
BCC-55	75.0	2.5	15.5	727	46.5	158.0	6.2
BCC-56	60.7	3.0	11.5	1085	54.0	301.5	6.1
BCC-57	51.3	1.5	0.0	286	36.0	66.5	6.0
BCC-58	46.8	1.0	16.5	986	51.0	365.0	5.0
BCC-59	55.3	1.0	15.0	1204	52.5	386.0	5.2
BCC-60	56.1	1.5	0.0	1001	54.0	222.5	7.4
BCC-61	64.5	1.5	23.0	1332	55.5	493.5	5.3
BCC-62	63.6	1.0	8.0	749	41.0	166.5	5.6
BCC-63	35.7	3.5	0.0	454	45.0	366.0	4.2
BCC-64	62.7	1.0	16.5	1825	52.5	227.5	6.5
BCC-65	51.6	1.0	13.5	765	46.0	218.5	5.3
BCC-66	61.3	1.0	16.5	1412	58.0	556.0	5.7
BCC-67	68.8	1.5	16.5	1116	56.0	306.5	5.4
BCC-68	82.6	1.5	7.5	1306	57.0	466.5	4.0
BCC-69	49.4	1.5	15.0	775	61.5	646.0	4.0
BCC-70	36.1	1.0	6.0	574	52.0	149.5	4.7
BCC-71	60.1	1.0	13.0	1997	48.2	534.0	4.2
BCC-72	42.9	2.0	8.0	871	66.0	427.0	4.7
BCC-73	70.5	2.5	14.5	1266	51.1	267.0	5.7
BCC-74	81.8	1.0	7.0	1001	43.7	192.5	6.3
BCC-75	43.7	2.0	0.0	712	47.8	169.5	5.5
BCC-76	71.3	1.5	8.5	838	41.1	184.5	4.3
BCC-77	54.1	1.5	17.5	2059	63.2	468.0	7.3
BCC-78	52.6	1.0	15.5	1372	60.5	297.0	6.2
Mean	56	1	10	895	48	275	6
Max	83	4	23	2150	75	821	10
Min	27	1	0	78	26	28	3
s.d	13.0	0.6	5.1	502.2	9.7	161.1	1.4
SE	1.5	0.1	0.6	56.9	1.1	18.2	0.2
CD	2.9	0.1	1.2	113.1	2.2	36.3	0.3

Table 1.4.1a: Agrometric characters of different chrysanthemum collections contd.

Name of the genotypes	Plant height (cm)	No. branches/plant		Weight of loose flower/plant (g)	Days taken to first bud appearance after planting	Number of flowers /plant	Diameter of flower (cm)
		Primary	Secondary				
	1	2	3	4	5	6	
BCC 82	49.7	2.5	15.0	645.2	75.5	218.0	5.3
83	104.2	3.0	20.0	1767.7	79.0	404.5	8.4
84	62.0	5.0	14.5	631.0	59.0	202.5	7.3
85	37.5	3.5	17.5	468.1	67.0	317.5	3.4
86	107.7	4.0	18.0	2982.4	71.0	433.5	8.5
87	79.8	2.5	23.0	1857.5	91.5	1002.5	3.6
88	86.4	6.5	10.5	1312.3	79.0	275.5	6.6
89	48.9	3.5	3.0	942.7	77.5	241.0	7.0
90	107.3	3.5	22.0	2571.7	78.5	701.5	3.5
91	31.4	3.0	15.0	1065.5	69.5	1052.0	3.4
92	34.0	2.0	5.5	158.1	70.0	75.0	5.8
93	71.1	5.0	1.0	480.9	67.5	192.0	6.4
94	15.9	6.0	1.5	157.4	69.5	78.0	3.3
95	73.7	3.5	17.0	1719.0	121.0	475.0	4.5
96	37.4	8.0	2.5	475.2	74.5	818.0	2.7
97	83.3	4.5	21.0	2014.9	124.0	506.0	5.2
98	34.4	2.5	11.0	67.9	75.5	23.5	2.9
99	31.3	2.0	11.5	363.3	70.5	375.5	3.4
100	31.9	4.0	13.0	186.0	69.0	332.5	3.9
101	57.8	3.5	14.5	839.8	67.5	287.5	4.6
102	24.3	4.5	18.0	886.2	65.5	612.0	4.7
103	105.8	3.0	23.0	1515.3	89.5	150.5	10.3
104	56.8	3.0	16.5	1054.6	79.0	312.0	5.1
105	41.3	2.5	17.0	383.1	88.5	57.5	9.3
106	24.0	1.0	7.5	327.3	71.5	273.5	4.3
107	42.9	1.0	15.0	1120.0	74.5	377.0	4.4
108	52.6	2.0	15.5	352.8	84.5	36.0	12.4
109	43.2	2.5	13.5	352.1	51.0	57.0	6.4
110	31.5	3.0	16.5	52.5	79.5	7.0	9.2
111	10.2	2.0	14.0	1827.0	83.5	317.5	10.3
112	25.0	3.5	2.5	24.1	81.0	5.5	8.5
113	31.3	2.0	6.0	39.6	83.0	8.0	8.0
114	26.5	2.0	4.5	256.5	81.0	235.0	4.3
115	33.5	3.5	5.5	252.0	77.0	124.0	7.0
116	83.5	4.5	0.0	1171.5	87.5	69.0	12.0
118	33.1	3.0	15.5	306.0	59.0	299.5	4.0
119	21.1	3.0	5.0	516.8	69.0	282.0	4.4
120	40.8	2.5	19.5	1690.1	67.0	491.5	7.1
121	21.2	5.0	5.5	399.6	54.5	433.0	2.1
122	30.3	4.5	0.0	452.6	82.5	300.0	3.5
123	43.6	2.0	3.5	247.3	76.0	105.0	6.4
Mean	49.0	3.37	11.73	827.6	76.61	306.4	5.90
Sem	1.70	1.34	1.80	77.7	1.13	79.0	0.11
CD	5.05	3.97	5.34	163.2	2.38	165.9	0.23
CV	4.91	56.19	21.68	9.4	1.48	25.8	1.82
GCV=	54.9	15.20	57.49	88.6	18.11	80.5	44.07
PCV=	55.1	58.21	61.44	89.1	18.17	84.5	44.10
Heritability (%)	99.2	6.81	87.54	98.9	99.34	90.7	99.83
GA=	55.2	0.28	13.00	1501.6	28.48	483.8	5.36
GA % of Mean	112.7	8.17	110.81	181.4	37.18	157.9	90.70

Table 1.4.1b: Agrometric characters of different chrysanthemum varieties and selections

Name of the genotypes	Plant height (cm)	No. branches/plant		Weight of loose flower /plant(g)	Days taken to first bud appearance after planting	Number of flowers/plant	Diameter of flower (cm)
		Primary	Secondary				
	1	2		3	4	5	6
Bidhan Shova	111.2	2.5	21.5	900.0	65.0	450.0	9.1
Bidhan Agnishikha	102.7	4.5	23.5	1911.7	86.5	316.5	6.6
Bidhan Sabita	63.5	2.5	14.0	904.2	72.0	411.0	6.3
Bidhan No Pinch	52.7	2.5	32.5	1632.3	70.0	949.0	5.2
Bidhan Agnidev	70.0	2.5	20.0	1441.4	72.0	364.0	6.7
Bidhan Lalima	61.2	3.0	29.0	2300.4	69.0	639.0	7.1
Bidhan Rupanjali	53.8	3.5	22.5	1716.0	70.5	715.0	5.1
Bidhan Swapna	75.8	5.5	23.0	1840.0	68.0	400.0	8.1
Bidhan Antara	75.1	1.5	16.0	1177.0	65.0	535.0	4.5
Bidhan Gold	53.8	1.5	16.0	1596.0	69.5	380.0	5.1
C-6/11	61.7	1.5	16.0	605.2	65.5	356.0	4.2
Bidhan Rajat	50.8	4.0	16.0	1612.8	69.5	320.0	7.7
Bidhan Mallika	84.1	2.5	23.0	1716.0	67.0	572.0	5.5
Bidhan Madhuri	82.7	3.5	30.5	1623.5	71.0	498.0	5.6
Bidhan Mum	72.6	5.0	24.5	1200.2	70.0	444.5	5.1
Bidhan Purna	30.7	3.5	32.0	1008.7	50.5	458.5	8.1
Bidhan Tarun	63.6	3.0	19.0	2316.0	65.5	965.0	5.3
Bidhan Jayanti	70.0	3.5	23.0	1057.0	70.5	377.5	6.7
Bidhan Prava	64.3	1.5	15.5	599.5	73.5	272.5	6.7
Bidhan Subhasini	69.7	2.5	26.5	1312.0	67.0	410.0	7.4
Bidhan Pratima	36.0	2.5	16.0	620.2	69.0	304.0	5.9
Bidhan Sweeta	50.2	3.0	16.5	1236.9	68.5	332.5	5.6
Bidhan Neeta	52.6	3.5	16.0	1188.0	67.0	270.0	5.3
Bidhan Monami	58.1	4.0	17.5	1248.0	72.0	390.0	6.2
D-1-sel	69.1	2.0	19.5	1725.0	66.5	375.0	7.1
Garden beauty	60.6	3.5	21.0	1353.0	72.0	330.0	8.3
Jaya	67.2	2.0	19.5	1783.5	65.0	362.5	6.7
Royal purple	45.9	1.0	17.0	635.7	61.5	195.0	5.5
Winter Queen	28.6	3.0	22.0	336.0	63.5	336.0	3.5
Autum joy	74.6	1.5	17.5	797.4	68.5	448.0	8.2
Anmol	43.8	4.0	21.5	1095.4	66.5	576.5	4.7
Nanako local	51.7	2.0	11.0	929.5	64.5	275.0	4.6
Basanti local	42.8	2.0	13.5	217.6	65.5	98.0	9.1
Yellow deligate	41.2	2.5	21.0	343.1	69.0	73.0	5.3
Mauve saram	71.1	3.5	20.5	2566.5	65.5	614.0	6.7
Bcc-37	58.7	2.5	15.5	1109.6	63.0	380.0	5.3
Bcc-40	59.6	2.5	17.0	520.8	65.0	372.0	5.4
Bcc-45	40.6	2.0	18.5	811.8	62.5	477.5	4.9
Bcc-42	53.9	1.5	21.0	630.2	67.0	151.5	5.7
Bcc-46	40.7	3.0	8.5	626.4	52.5	261.0	5.5
Bcc-47	39.6	3.0	7.0	488.4	52.0	222.0	5.4
Bcc-48	70.6	2.5	18.5	857.5	67.0	87.5	10.4
Bcc-49	61.4	1.0	7.0	588.8	63.5	64.0	10.3
Pussa aditya	42.7	2.0	9.5	333.2	59.0	245.0	5.3
DFR-9-6	35.7	2.5	8.5	585.7	63.0	450.5	4.4
DFR-9-4	68.7	2.5	8.5	701.4	64.0	334.0	5.3
DFR-22-5	49.0	3.0	9.0	935.1	65.5	219.5	6.4

Pussa Arunima	51.6	1.0	5.5	186.9	66.0	33.5	10.0
Pussa centanary	68.6	1.5	5.5	324.0	67.5	36.0	11.0
Pussa Keshri	52.8	2.0	6.5	307.2	66.0	32.0	12.1
Pussa Chitraksha	72.6	3.0	21.0	1186.9	70.0	456.5	8.1
S 15-2	65.7	3.0	6.5	785.4	67.0	178.5	5.9
S 15-3	55.7	2.0	16.0	1168.0	65.5	496.0	5.1
S 15-4	51.6	2.5	4.5	167.4	67.0	90.0	6.5
S 15-5	65.7	2.0	10.5	249.0	66.5	150.0	6.2
S 15-6	65.6	1.0	12.0	327.3	60.5	167.0	6.1
S 15-7	57.6	1.0	16.0	758.1	66.0	361.0	6.5
S-15-8	73.8	1.0	16.0	864.0	68.0	320.0	6.5
S 15-9	65.6	1.0	9.0	989.5	66.0	798.0	3.1
S 15-10	81.7	1.0	8.0	564.3	69.5	165.0	6.8
S 15-11	44.5	2.0	11.5	361.3	63.5	203.0	6.9
S 15-12	73.3	2.0	12.0	316.4	63.0	166.5	5.6
S 15-13	63.2	2.0	12.5	464.6	63.0	242.0	5.7
S 15-14	81.2	1.5	18.0	1287.0	61.0	495.0	5.9
S 15-15	60.7	1.5	16.0	408.5	58.5	194.5	5.4
S 15-16	75.7	1.5	12.5	278.4	64.5	232.0	5.6
S 15-17	66.6	1.5	18.0	1530.0	64.5	850.0	2.9
S 15-18	67.8	1.5	15.0	105.0	62.5	52.5	8.6
S 15-19	61.2	2.0	18.5	949.5	62.0	527.5	4.8
S 15-20	54.2	1.5	14.5	257.3	60.5	171.5	3.6
S 15-22	75.8	2.0	16.5	1297.0	69.5	386.0	4.6
S- 15-23	77.1	2.5	7.5	138.6	66.5	55.0	5.8
S-14 -1	57.1	4.0	18.0	85.0	78.0	85.0	8.1
S-14 -2	30.6	2.5	23.5	1351.0	95.0	350.0	4.3
S-14 -3	53.5	7.0	41.0	860.2	68.5	168.0	5.5
S-14 -4	55.5	6.5	48.0	806.4	87.0	288.0	4.6
S-14 -5	28.1	4.5	25.0	1032.0	87.0	430.0	5.7
S-14 -6	41.1	3.0	35.0	958.8	92.0	470.0	4.3
S-14 -7	60.8	8.5	52.5	2841.6	83.0	555.0	4.3
S-14 -8	33.6	4.0	11.0	189.0	58.0	67.5	6.1
S-14 -9	38.2	4.0	32.5	728.0	67.0	140.0	6.4
S-14 -10	20.5	4.0	28.0	267.5	62.5	88.0	4.9
S-14 -11	31.1	2.0	10.0	397.8	60.5	90.0	5.3
S-14 -12	49.1	2.0	20.0	1995.0	75.0	525.0	6.5
S-14 -13	32.7	3.5	29.0	666.6	75.0	165.0	6.1
S-14 -14	34.1	4.0	35.0	1264.1	75.0	286.0	6.1
S-14 -15	53.4	4.5	79.5	2416.6	84.5	430.0	8.4
S-14 -16	37.6	7.5	35.0	1193.4	72.5	270.0	6.1
Mean	57.6	2.8	19.3	1068.9	67.9	333.5	6.2
Max	111.2	8.5	79.5	2316.0	95.0	965.0	12.1
Min	20.5	1.0	4.5	85.0	50.5	32.0	2.9
SD	17.7	1.6	12.8	1489.9	8.2	211.4	1.8
SE	1.88	0.17	1.36	158.82	0.88	22.54	0.19

Germplasm collection and evaluation of Chrysanthemum at BCKV

The station maintains 123 different types collected from different nurseries and growers. Besides this BCKV centre also maintained 89 varieties including named ones and newly selected materials from different poly crosses. The collections comprises mostly the pompon types suitable for loose flower production, garden decoration and pot mum production. Agromorphological characters of the genotypes are depicted in Table No. 1.4.1a and 1.4.1b. Loose flower wt. ranged from 78g plant to 2932g per plant.

Project No.1.6.1: Collection, evaluation and Maintenance of Germplasm of Anthurium.

Germplasm collection of Anthurium

BCKV centre maintained 14 genotypes of Anthurium during the year of report. Spike yield per year ranged from 1.5 in Aloxes to 8.5 in Tropical. Plant height ranged from 1.6 to 43 cm. maximum spike length was recorded in Ozaki Red (38 cm) and minimum in Cancan (7.8 cm).

Table 1.6.1: Agromorphological characters of different anthurium genotypes

Name of the germplasm	Plant height (cm)	No. of suckers/plant	No. of leaves/plant	Duration of flowering(days)	Length of spike(cm)	No. of spikes/plant
Tropical	43.0	7.5	8.5	July-Feb.	37.3	3.0
K. pink	37.6	6.5	7.5	July-Nov.	27.1	1.5
Nita	41.6	6.0	8.0	July-Nov.	26.0	1.5
Tinora	36.9	5.5	7.0	July-Nov.	30.5	1.5
Ozaki red	35.3	6.5	9.0	July-Nov.	38.0	2.0
Pistaghe	29.3	3.5	8.0	July-Oct.	30.6	1.5
Regina	32.6	5.5	7.5	July-Nov.	26.5	1.5
Aloxes	34.6	3.5	9.0	July-Nov.	35.1	1.0
Honduras	34.1	3.0	7.0	July-Oct.	27.1	1.0
Marina	29.9	8.0	10.0	July-Nov.	25.3	1.5
Agnihatri	17.6	7.5	8.0	July-Nov.	36.4	1.5
Salmon	22.8	3.5	9.0	July-Oct.	29.1	1.5
Anmol	20.5	3.0	9.0	July-Nov.	26.8	1.5
Cancan	30.0	5.0	9.5	July-Nov.	7.8	1.5
SE(±)	1.11	0.37	0.61		1.68	0.23
CD at 5%	2.19	0.78	1.28		3.53	0.49

Table 1.6.1: Agromorphological characters of different anthurium genotypes contd.

Name of the germplasm	No. of spikes/year	Angle of spathe	Spathe length(cm)	Spathe width (cm)	Spadix length
Tropical	8.5	83.5	8.2	7.5	4.1
K. pink	4.5	39.0	7.4	6.5	3.8
Nita	2.5	44.0	7.9	6.5	3.8
Tinora	2.5	79.0	8.4	6.5	3.6
Ozaki red	5.5	77.0	8.8	6.5	3.9
Pistaghe	4.5	89.0	7.9	7.8	2.9
Regina	3.5	89.5	7.8	7.0	2.9
Aloxes	1.5	85.0	8.5	9.2	3.1
Honduras	2.5	86.0	7.9	7.2	3.5
Marina	2.5	44.0	8.1	7.1	4.5

Agnihatri	3.0	59.0	7.6	6.9	3.9
Salmon	3.0	44.0	7.1	6.7	5.0
Anmol	2.5	83.5	7.2	6.9	4.8
Cancan	5.5	82.5	8.4	8.0	3.6
SE(±)	0.33	0.95	0.15	0.34	0.22
at 5%	0.69	2.01	0.32	0.71	CD 0.47

Project No.1.7.1: Collection, evaluation and Maintenance of Germplasm of Tuberose.

Table 1.7.1a: Various agronomic and floral characters of different tuberose genotypes

Sl. No.	Name of the Genotype	Total no. of bulbs	No. of bulbs >7.5 cm	No. of bulbs 5-7.5 cm	No. of bulbs < 5 cm	Total wt. of bulbs	Wt. of bulbs >7.5 cm	Wt.. of bulbs 5-7.5 cm	Wt.. of bulbs <5 cm	Wt.. of single bulbs
1	Shringar	41.5	13.5	11.5	16.5	235.5	166.9	36.9	31.8	5.7
2	Phule Rajani	60.9	18.7	11.1	31.1	358.7	274.1	44.4	40.3	5.9
3	Calcutta Double	37.3	11.1	9.7	16.5	233.3	144.9	39.5	49.0	6.3
4	Rajat Rekha	16.1	4.5	5.1	6.5	57.5	23.1	21.1	13.3	3.6
5	Prajwal	37.1	23.6	6.2	7.3	553.5	485.9	56.1	11.5	15.1
6	Vaibhav	55.0	11.9	16.2	26.9	414.0	322.0	63.2	28.8	7.5
7	Subhasini	40.4	12.5	11.3	16.6	256.4	159.0	47.6	49.7	6.3
8	Calcutta Single	54.9	18.5	23.1	13.2	427.5	251.3	135.4	40.9	7.8
9	Swarna Rekha	37.1	12.2	11.0	13.9	140.5	94.2	34.0	12.3	3.8
10	Sikim Selection	54.9	17.5	7.7	29.8	369.8	273.0	45.2	51.6	6.7
11	Hyderabad Single	48.9	15.4	8.2	25.3	493.4	366.8	83.0	43.7	10.1
12	GKTC-4	57.8	11.7	15.8	30.3	421.9	225.3	121.3	75.3	7.3
13	Hyderabad Double	105.0	27.0	13.7	64.3	583.4	380.2	83.5	119.7	5.6
14	Arka Nirantara	31.7	12.1	6.6	13.0	276.0	205.9	40.2	29.9	8.7
	Mean	48.5	15.0	11.2	22.2	344.4	240.9	60.8	42.7	7.2
	CD at 5%	3.50	1.56	1.22	2.26	29.4	25.3	6.73	7.12	0.98
	CV (%)	4.4	6.4	6.7	6.3	5.3	6.5	6.8	10.3	8.5
	GCV (%)	41.95	37.77	42.72	66.02	44.16	50.82	55.15	66.04	39.57
	PCV (%)	42.18	38.31	43.25	66.32	44.48	51.23	55.57	66.84	40.47
	Heritability (%)	98.89	97.19	97.60	99.10	98.59	98.39	98.48	97.62	95.60

Germplasm evaluation of tuberose:

Fourteen genotypes were evaluated during 2015-16 which is presented in Table 1.7.1a and Table 1.7.1b. All the 14 lines were found to differ significantly with respect to the growth and flowering characters studied. Calcutta Single recorded highest spike yield per unit area (94.9 per sq m) which was followed by Hyderabad Single (82 per sq m), Prajwal (65.8 per sq m) and Shringar (65.0 spike per sq m). Rajat Rekha and Swarna Rekha recorded very poor yield (37 and 10 spikes per sq m respectively) and that too in second year only. Highest number of bulb per clump was noticed in Hyderabad Double (105) and the lowest number was in Rajat Rekha (16.3). These two varieties also recorded highest and lowest bulb weight per clump (583 and 58 g respectively). Individual bulb weight was maximum in Prajwal (15g) indicating maximum number of good size bulbs for planting.

Table 1.7.1b: Various bulb production characters of different tuberose genotypes

Sl. No.	Name of the Genotype	Plant Height (cm)	No. of shoots per clumps	Spike length (cm)	Rachis length (cm)	No. of florets per spike	Length of florets (cm)	Diameter of florets (cm)	Wt. of cut spike (g)	No. of spikes /sq m
1	Shringar	59.5	25	93.4	32.0	46.0	5.7	3.9	93.0	65.0
2	Phule Rajani	57.0	27	91.7	34.8	48.0	5.7	4.7	93.0	53.4
3	Calcutta Double	51.7	26	66.7	28.5	48.7	5.5	4.3	122.0	53.4
4	Rajat Rekha	32.7	21	69.7	33.0	34.0	5.7	4.3	45.3	37.3
5	Prajwal	69.7	23	120.8	32.4	48.0	6.7	4.8	170.7	65.8
6	Vaibhav	62.0	26	98.3	41.4	47.7	6.1	4.3	85.0	59.3
7	Subhasini	36.3	13	85.0	24.0	45.0	6.0	6.0	116.0	49.1
8	Calcutta Single	57.0	36	71.8	23.7	33.3	6.1	4.0	70.7	94.9
9	Swarna Rekha	33.4	16	86.3	44.3	44.0	4.9	3.5	131.0	10.2
10	Sikim Selection	68.3	26	136.4	34.0	43.3	5.6	4.2	91.7	61.1
11	Hyderabad Single	51.3	33	91.7	31.7	34.7	5.7	4.1	95.0	82.0
12	GKTC-4	47.3	33	94.3	35.0	50.0	4.8	3.4	92.3	64.7
13	Hyderabad Double	57.7	33	117.0	46.3	45.3	5.1	4.1	125.0	59.0
14	Arka Nirantara	52.0	22	81.0	26.8	50.0	6.2	4.3	131.7	58.4
	Mean	52.56	15.48	93.2	33.4	44.1	5.7	4.3	104.5	58.1
	CD at 5%	2.74	3.06	4.05	2.18	3.10	0.20	0.25	9.08	8.44
	CV (%)	3.23	12.2	2.7	4.0	4.3	2.2	3.6	5.4	6.0
	GCV (%)	22.32	24.42	21.42	20.38	13.05	9.16	14.35	29.37	33.34
	PCV (%)	22.55	27.32	21.59	20.78	13.75	9.42	14.79	29.86	33.87
	Heritability (%)	97.95	79.94	98.44	96.22	90.01	94.51	94.15	96.76	96.87

Project No.1.8.1: Collection, evaluation and Maintenance of Germplasm of Gerbera.

Eleven genotypes of gerbera were collected from KFBioplants, Pune to enrich germplasm collection. The varieties were evaluated in RCBD and the different agronomic characters are presented below. From the Table No. 1.8.1 it is reflected that all vegetative growth parameters like no. of leaves /plant, leaf length (cm), leaf breadth (cm) and no. of suckers/plant/year of eleven gerbera varieties showed significant differences among the varieties. Maximum no. of leaves/plant was obtained in Rosalin (10.0/plant) variety, whereas lowest was found in Inferno (5.0/plant) and Stanza (5.1). Regarding size of leaf, Daneallen found better (leaf length: 52cm and leaf breadth: 10.80cm) over others varieties and very poor response was recorded in Paradiso variety. In case of sucker production, there is no significant variation among the varieties of Daneallen (3.4/plant/year), Rosalin (3.4/plant/year) and Pree Intezz (3.8/plant/year), whereas very negative response were found in Paradiso, Galiath, Wahalla and Brilliance. Daneallen variety of gerbera takes more space(3250sq.cm) and lowest was taken by Galiath(1575).

Treatments	No. of leaves /plant	Leaf length (cm)	Leaf breadth (cm)	Plant spread(E-W and N-S)cm	No. of suckers /plant/year	Days to flower bud burst	Days to flowering	Flower diameter (cm)
Balance	7.30	47.00	9.50	60x45=2700	3.20	12.0	92.0	9.20
Paradiso	6.60	35.00	7.10	50x40=2000	2.50	10.0	89.0	9.50
Brilliance	7.60	40.00	8.10	54x40=2160	2.80	12.0	88.0	8.00
Daneallen	7.60	52.00	10.80	65x50=3250	3.40	12.0	87.0	9.60
Rosalin	10.00	45.00	9.00	55x45=2475	3.40	10.0	77.0	10.20
Pree Intezz	6.00	44.00	10.80	54x45=2430	3.80	12.0	75.0	9.00
Galiath	8.30	35.00	7.00	45x35=1575	2.80	10.0	81.0	10.00
Inferno	5.00	39.00	7.50	45x40=1800	3.00	12.0	79.0	9.10
Wahalla	7.50	47.00	5.00	60x45=2700	2.80	12.0	86.0	9.20
Stanza	5.10	46.00	8.40	50x35=1750	3.00	10.0	83.0	7.80
Jaffana	7.60	45.00	6.80	55x45=2475	3.20	12.0	83.0	9.70
SE m(±)	0.327	0.835	0.216		0.141	0.462	1.022	0.188
CD at 5%	0.972	2.480	0.641		0.419	1.371	3.038	0.558

After planting pink varieties of gerbera like Rosalin (77) and Pree Intezz (75) showed early flowering over others varieties, whereas very late flowering was observed in all yellow (87-89 days) and white varieties (Balance, 92 days). Flower production per plant per year was obtained maximum in Pree Intezz (29.50) followed by Rosalin (28.50) and lowest was recorded in Wahalla (12.50). Besides these three varieties Daneallen (22.50) and Jaffana (20.50) were also good performer. Varieties like Paradiso, Brilliance, Galiath, Inferno, Wahalla, Stanza showed very poor performance (14.20-18.50). Regarding quality of flower in terms of flower stalk length and flower diameter, average flower diameter of all varieties was excellent (9.10-10.20cm), except Stanza (7.8cm) and Brilliance (8.0 cm), but most promising performance was found in Rosalin (10.20 cm) and Galiath (10.0 cm). Stalk length was recorded highest in Balance (71.50cm) followed by Wahalla (70.50cm) and lowest in Paradiso (47.50cm) and these three varieties had very weak stalk over others varieties, Flower stalk diameter was maximum in Stanza and Daneallen. Longevity of flower in vase

life was obtained highest in Daneallen (13.0 days) which was followed by Balance and Inferno by 12 days. Reaction to insects and pest of gerbera showed minimum in Daneallen, Rosalin, Pree Intezz, moderate in Balance, Wahalla and Jaffana and maximum in Paradiso, Brilliance, Galiath, Wahalla and Stanza.

Treatments	Flower stalk length (cm)	Flower stalk diameter (cm)	Reaction to insect/pest	No. of flowers /plant/year	Colour of flower	Vase life (days)
Balance	71.50	2.20	Moderate	18.50	White	12.0
Paradiso	47.50	1.90	Maximum	15.00	Yellow	10.0
Brilliance	60.00	1.90	Maximum	14.50	Yellow	11.0
Daneallen	55.60	2.70	Minimum	22.50	Yellow	13.0
Rosalin	65.40	2.10	Minimum	28.50	Light pink	10.0
Pree Intezz	62.60	2.10	Minimum	29.50	Pink	11.0
Galiath	61.60	2.20	Maximum	16.50	Brick	11.0
Inferno	52.50	2.10	Maximum	15.50	Orange	12.0
Wahalla	70.50	1.90	Moderate	12.50	Red	10.0
Stanza	51.50	2.50	Maximum	14.20	Red	7.00
Jaffana	61.80	1.90	Moderate	20.50	Red	11.0
SE m(±)	0.862	0.101		0.577		0.454
CD at 5%	2.559	0.299		1.714		1.349

Project No.1.15.2: Collection, evaluation of turf grasses.

Name of the varieties	Qualitative characters						Other characters		
	Days to germination	Germination percent age	Fresh wt. of clipping (10 days after mowing),	Dry wt. of clipping	Depth of root	Growth rate	Response to mowing	Pest and disease incidence	Weed intensity in turf
Korean grass(<i>Zoysia tenuifolia</i>)	Runner	80% Survivability of runner after planting	85g/sq.ft	58g/sq.ft	7.5cm	5.20cm/3month	Well during, burning patches during summer	Termite, earth warm, helminthosporium blight, Fusarium patch diseases	Cyperus rotundus
<i>Dichondra spp.</i>	Runner	60% Surviv	45g/sq.ft	32gm/sq.ft	8.0cm	7.0cm/3 month	Not suitable	Burning of leaves and	Cyperus rotundus

		ability of runner after planting					in sunny situation	stunted growth during summer	s
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This centre maintained two grass species for evaluation. Korean grass showed very good response in terms of adaptability, growth, response to mowing and resistance to pest and diseases, but there is weed problem of *Cyprus rotundas* and may be taken lawn development in this belt under sunny situation. Attractive glossiness appears during winter over others season.

Another species of *Dichondra* was quite good for shady situation, but grow well in sunny situation throughout the year, except summer. It had good response to mowing and resistant to pest and diseases, but having a problem of weed management.

Maintenance and evaluation of Marigold germplasm

Name of the genotypes	Plant height(cm)	Plant spread (cm)	Days to 50% flowering	Flowering duration (days)	No. of flowers/plant	Diameter of flower (cm)	Loose flower yield/plant(kg)
Marigold-2	35.8	39.3	51	46	81.3	4.9	285
Marigold-3	37.3	41.7	73	60	91.3	4.3	402
Marigold-4	44.5	50.0	62	43	113.3	6.0	725
Marigold-5	45.2	47.0	49	47	107.0	4.9	546
Marigold-6	34.8	43.8	54	42	90.7	4.2	317
Marigold-7	66.9	56.2	57	41	340.7	3.4	1192
Marigold-8	30.6	42.7	44	37	86.3	4.0	216
Bidhan marigold-1	31.7	39.7	62	45	68.7	4.2	254
Pussa Arpita	91.3	75.0	64	51	344.0	5.4	1032
IIHRFm-1	21.5	25.0	63	53	59.7	3.0	101
Pussa Narangi	46.7	41.7	63	58	54.3	5.0	261
Pussa Basanti	48.9	48.3	58	40	43.3	4.6	234
IIHRMo-2	22.9	23.8	68	54	60.3	3.2	109
ELDORADO	77.5	51.7	81	52	47.0	6.0	277
IIHRMo-3	24.2	28.8	77	54	53.0	3.9	154
ZEMPASUCHILT EC NO-733799	44.8	50.4	75	44	80.3	3.0	169
RED COAT EC NO-	23.8	30.1	74	60	43.3	3.2	87
IIHRMo-4	76.6	51.8	64	58	41.0	6.1	262
UHRS-FM-786	26.33	30.3	54	48	73.0	2.4	130.6
Mean	43.8	43.0	62.8	49.1	98.9	4.3	355.4
SEm	0.78	1.31	1.04	0.98	3.23	0.04	12.11
CD0.05	1.67	2.81	2.23	2.09	6.91	0.09	25.91
CV%	3.08	5.29	2.87	3.45	5.65	1.72	5.90