



P-ISSN: 2349-8528  
E-ISSN: 2321-4902  
IJCS 2017; 5(3): 370-372  
© 2017 JEZS  
Received: 03-03-2017  
Accepted: 04-04-2017

**A Kireeti**  
Horticultural Research Station,  
Dr. YSR Horticultural  
University,  
Venkataramannagudem, A.P,  
India

**M Ravindrababu**  
Horticultural Research Station,  
Dr. YSR Horticultural  
University,  
Venkataramannagudem, A.P,  
India

**J Om Prasad**  
Horticultural Research Station,  
Dr. YSR Horticultural  
University,  
Venkataramannagudem, A.P,  
India

**P Ramadevi**  
Horticultural Research Station,  
Dr. YSR Horticultural  
University,  
Venkataramannagudem, A.P,  
India

#### Correspondence

**A Kireeti**  
Horticultural Research Station,  
Dr. YSR Horticultural  
University,  
Venkataramannagudem, A.P,  
India

## Evaluation of chrysanthemum (*Dendranthema grandiflora* Tzvelev) varieties in humid coastal zone of Andhra Pradesh

A Kireeti, M Ravindrababu, J Om Prasad and P Ramadevi

#### Abstract

Twenty four varieties of chrysanthemum were evaluated with an aim to identify suitable varieties based on different characters under coastal humid climate of Andhra Pradesh at Horticultural Research Station, Venkataramannagudem, during the year 2016-17. The results revealed that Pusa Centenary recorded maximum flower diameter (7.84 cm), less number of days to flowering (63.01 days) and highest flower yield (189.50 g/plant) followed by Neelima (188.67 g/plant) and Gulmohar (179.10 g /plant) for flower yield. Though Yellow Gold, Haldhi Ghati and White Prolific recorded less yield compared to Pusa Centenary (1293.41 g/plot, 1015.85 g/plot and 1480.52 g/plot respectively), they are suitable for this region because they are having good acceptance in the local market due to flower colour and appearance.

**Keywords:** Chrysanthemum, flowering yield, early flowering, flower diameter

#### 1. Introduction

Chrysanthemum (*Dendranthema grandiflora* T.) is one of the most important flower crops grown commercially in India for cut and loose flowers and is also used for garden display. It is commonly known as Guldaudi, Autumn Queen or Queen of the East (Koley and Sarkar, 2013) [8]. belongs to the family Asteraceae. In India, chrysanthemum is grown commercially and it occupies third rank in area with 16.63 thousand ha. (Janakiram and Rao, 2001) [5]. It is mostly used in our country for making garlands, venis, bracelets, flower decoration and religious offerings (Bohra and Kumar, 2014) [2]. But, in South India mostly the yellow coloured flowers are preferred and grown as loose flowers for trade. The cultivation of chrysanthemum is gaining importance in Andhra Pradesh due to its relative ease in cultivation, high returns and increasing market demand. The growth and performance of different cultivars exhibit wide range of diversity with the prevailing climatic conditions of their growing habitat. Therefore, varietal evaluation became necessary to identify the suitable variety for the specific region. The performance of any crop or variety largely depends on interaction between genotype and environment. As a result, varieties, which perform well in one region, may not perform same in other regions of varying climatic conditions. Hence, it is necessary to evaluate new genotypes for their quality traits under varying climatic conditions.

#### 2. Materials and methods

The present investigation was conducted during 2016-17 at Horticultural Research Station, Venkataramannagudem, West Godavari dist., Andhra Pradesh. The rooted cuttings of 24 varieties were planted in open field at spacing of 30 x 20 cm apart in Randomized Block Design with three replications consisting 10 plants in each replication. Three plants were selected from each replication for recording observations. The observations were recorded at regular intervals and uniform package and practices were followed throughout the cropping season. Data was recorded for plant height (cm), number of flowers per plants, days taken for first bud appearance, days to initiation of first flower, flower diameter (cm), average flower weight (gm), and flower yield (t/ha) using the standard method. Data were subjected to analysis as per the method suggested by Panse and Sukhatme (1985) [11].

#### 3. Results and Discussion

Among the 24 chrysanthemum varieties evaluated highest plant height was recorded in Gulmohar (76.88 cm) and was significantly superior over other varieties which was followed by

Neelima (59.03 cm), Ajay Orange (55.17 cm) whereas, lowest plant height was recorded in Ramlal Dada (30.73 cm) at 90 days after transplanting. Stem diameter was maximum in Pusa Aditya (1.46 cm), and minimum in Chandrika and White Prolific (0.65 cm).

Early flower bud initiation was observed in Shyamala (48.45 days) which was on par with Pusa Chitraksha (50.84 days), Shanti (55.72 days), Ramlal Dada (57.18 days), Anmol (62.34 days) and Pusa Centenary (63.01 days). Late flower bud initiation was noted in Keerthi (92.73 days) which was on par with T.Q. Pink (91.17 days), Yellow Gold (88.62 days), Garden Beauty (85.62 days), Pusa Aditya (81.26 days), Basanthi (78.29 days), Gulmohar (85.54 days). Variation for earliness in flowering seems to be genetically controlled character in the varieties and similar observations were made by Kanamadi and Patil (1993)<sup>[6]</sup>, Behera *et al.*, (2002)<sup>[11]</sup>, Rao and Pratap (2006)<sup>[13]</sup> and Rajendra Parihar (2016)<sup>[12]</sup> in chrysanthemum.

Maximum flower diameter was recorded in Pusa Centenary (7.84 cm) which was on par with Garden Beauty (7.09 cm), White Queen (7.07 cm), Gulmohar (6.94 cm), Yellow Gold (6.63 cm) and Mahatma Gandhi (6.58 cm). Minimum flower diameter was recorded in Ramlal Dada (3.38). Probably variation in flower diameter might be due to variation in the genetic makeup of varieties Kanamadi and Patil (1993)<sup>[6]</sup>, Gaikwad and Patil (2001)<sup>[4]</sup> Kavita *et al.*, (2003)<sup>[7]</sup>, Mishra *et al.*, (2006)<sup>[9]</sup>, Rao and Pratap (2006)<sup>[13]</sup> and Swaroopini (2013). Highest number of flowers was recorded in Basanthi (182.50) which was significantly superior over other treatments. Lowest number of flowers was noted in T.Q. Pink (29.66) which was significantly on par with White Prolific (34.47), Garden Beauty (37.57), Gulmohar (39.23), Pusa Centenary (41.60), Mahatma Gandhi (41.66) and Anmol (46.02). The results are similar with findings of Rao and Pratap (2006)<sup>[13]</sup> and Rajendra Parihar (2016)<sup>[12]</sup>.

**Table 1:** Evaluation of chrysanthemum for growth and yield parameters

Treatments	Plant height			Stem diameter (cm)	Days to bud initiation	Days to initiation of first flower
	30 DAP	60 DAP	90 DAP			
Neelima	18.81	44.90	59.03	0.96	73.44	83.44
White Prolific	16.39	35.74	40.88	0.65	63.63	75.63
Shanti	15.06	36.29	33.13	0.79	55.72	65.72
Pusa Centenary	18.68	36.55	42.92	0.75	63.01	76.01
Anmol	16.51	27.46	36.91	1.26	62.34	70.34
Ajay Orange	15.19	36.52	55.17	0.81	76.26	86.26
Sweta Sringar	15.92	25.19	34.23	1.08	74.66	82.66
Haldhi Ghati	16.44	34.92	39.88	1.12	73.81	83.81
Gulmohar	16.94	57.93	76.88	1.03	85.54	95.54
Shyamala	15.90	25.04	35.50	1.10	48.45	58.45
Mahatma Gandhi	15.37	33.54	46.90	1.14	70.63	80.63
White Queen	16.59	25.65	36.38	0.70	64.99	77.99
Ramlal Dada	16.65	23.68	30.73	1.20	57.18	67.18
Corcoran Small	15.71	25.95	31.13	1.27	50.84	61.84
Pusa Aditya	16.63	25.85	35.85	1.46	81.26	91.26
Basanti	15.98	36.17	38.63	0.94	78.29	87.89
T.Q. Pink	16.96	33.98	43.80	1.15	91.17	100.67
Ravi Kiran	15.65	40.98	52.10	0.90	74.72	84.22
Garden Beauty	16.69	31.91	35.44	0.82	85.62	97.62
Lal Pari	16.23	35.75	39.79	1.16	59.44	71.44
Chandrika	16.01	33.21	44.04	0.65	70.25	80.25
Chandra Kanth	16.41	36.32	44.13	0.77	69.72	80.72
Keerthi	16.76	31.49	39.98	0.95	92.73	99.73
Yellow Gold	14.76	36.63	47.00	0.92	88.62	98.62
Mean	16.28	33.40	41.97	0.98	70.21	80.43
SEm ±	1.15	2.47	3.65	0.09	5.04	5.59
C.D. @ 5%	NS	7.20	10.65	0.25	14.73	16.32
CV (%)	10.01	10.45	12.30	12.40	10.16	9.83

Average flower weight was recorded maximum in Gulmohar (4.63 g) which was on par with Pusa Centenary (4.38 g). Average flower weight was least in Ramlal Dada (0.75 g) which was on par with 12 varieties of chrysanthemum. The variation among the varieties with respect to flower weight character was mainly because of increased flower size with

prominent central disc florets and also due to the presence of fairly more number of developed ray florets. Similar findings were reported by Munikrishnappa, *et al.*, (2013)<sup>[10]</sup> in china aster. Variation in flower weight depends on varietal character (Dhahiya *et al.*, 2003 and Mishra *et al.*, 2006)<sup>[9]</sup>.

**Table 2:** Evaluation of chrysanthemum for growth and yield parameters

Treatments	Flower diameter (cm)	No. of flowers per plant	Average flower weight (g)	yield per plant (g)	yield per plot (g)	Yield (t/ha)
Neelima	6.16	62.90	2.97	188.67	1772.22	224.84
White Prolific	5.75	34.47	3.13	107.43	1015.85	128.79
Shanti	4.21	55.84	1.16	65.12	612.33	77.68
Pusa Centenary	7.84	41.60	4.38	189.50	1763.90	224.02
Anmol	3.69	46.02	0.77	36.57	340.50	71.73
Ajay Orange	3.58	68.74	1.67	115.17	1087.43	137.88
Sweta Sringar	6.41	80.38	1.61	129.37	1222.02	154.94
Haldhi Ghati	4.07	103.53	1.51	156.53	1480.52	187.69
Gulmohar	6.94	39.23	4.63	179.10	1706.60	216.17
Shyamala	4.19	108.82	1.44	156.33	1491.04	188.85
Mahatma Gandhi	6.58	41.66	2.83	118.02	1114.92	141.36
White Queen	7.07	56.74	1.55	88.83	835.07	105.94
Ramlal Dada	3.38	120.97	0.75	90.91	852.83	108.22
Corcoran Small	4.45	153.41	0.86	131.07	1233.42	156.45
Pusa Aditya	4.92	149.20	1.06	158.63	1497.82	189.92
Basanthi	3.52	182.50	0.80	145.14	1379.05	174.74
T.Q. Pink	5.51	29.66	3.46	100.62	948.70	120.31
Ravi Kiran	8.33	76.77	1.48	112.56	1065.43	135.06
Garden Beauty	7.09	37.57	1.29	48.48	459.64	58.25
Lal Pari	6.18	51.39	1.23	63.45	598.73	75.92
Chandrika	5.66	58.02	1.70	98.77	931.62	118.14
Chandra Kanth	5.56	50.89	1.64	83.11	789.14	100.00
Keerthi	5.26	66.02	1.53	101.71	974.85	123.40
Yellow Gold	6.63	55.45	2.41	134.63	1293.41	163.68
Mean	5.43	73.51	1.86	113.80	1075.85	137.54
SEm ±	0.43	6.49	0.27	15.21	141.03	22.89
C.D. @ 5%	1.26	18.93	0.79	44.01	411.61	66.81
CV (%)	11.26	12.48	20.67	23.87	23.41	23.54

Flower yield per plant was maximum in Pusa Centenary (189.50 g) which was on par with Neelima (188.67 g), Gulmohar (179.10 g), Pusa Aditya (158.63 g), Haldhi Ghati (156.53 g). Lowest flower yield per plant was recorded in Anmol (36.57 g), which was on par with Garden Beauty (48.48 g), Lal Pari (63.45 g) and Shanti (65.12 g). Highest flower yield per plot was recorded in Neelima (1772.22 g) which was on par with Pusa Centenary (1763.90 g), Gulmohar (1706.60 g), Pusa Aditya (1497.82 g), Shyamala (1491.04 g) and Basanthi (1379.05 g) whereas, least flower yield per plot was recorded in Anmol (340.50 g).

#### 4. Conclusion

From this study it was concluded that Pusa centenary was early in flowering and recorded higher yields. However, Yellow Gold, Haldhi Ghati and White Prolific are having good acceptance in the local market due to their colour and flower appearance.

#### 5. References

1. Behera, TK, Sirohi, PS, Anand Pal. Assessment of chrysanthemum germplasm for commercial cultivation under Delhi condition. *J. Orna. Horti.* 2002; 5(2):11-14.
2. Bohra, M, Kumar A. Studies on effect of organic manure and bio-inoculants on vegetative and floral attributes of chrysanthemum cv. little darling. *The Bioscan*, 2014; 9(3):1007-1010.
3. Dhahiya DS, Guptha AK, Sehrawat SK. Performance of Chrysanthemum cultivars under semi-arid conditions of Haryana. National Symposium on Recent Advances in Indian Floriculture. Kerala Agricultural University, Trichur, 2003; 12-14:75.
4. Gaikwad A, Dumbre Patil SS. Evaluation of chrysanthemum varieties under open and polyhouse conditions. *J. Orna. Horti.* 2001; 4(2):95-97.
5. Janakiram T, Rao TM. Chrysanthemum, Indian Institute of Horticulture Research, Bangalore, 2001, 36.
6. Kanamadi VC, Patil AA. Performance of Chrysanthemum varieties in the transitional tract of Karnataka. *S. Ind. Horti.* 1993; 41(1):58-60.
7. Kavita KP, Santosh K, Ranjan S, Ram C. Evaluation of gerbera (*Gerbera jamesonii*) cultivars under tarai condition. Progress report of All India Coordinated Flori. Improvement Project. 2003, 138-142.
8. Koley S, Sarkar MM. Measurement of PAR and its impact on chrysanthemum (*Chrysanthemum morifolium* Ramaat). *The Bioscan*. 2013; 8(1):169-172.
9. Mishra HN, Das JN, Palai SK. Genetic variability studies in spray type chrysanthemum. *Orissa J. of Hort.* 2006; 34(1):8-13.
10. Munkrishnappa PM, Patil AA, Patil VS, Patil BN, Channappagoudar BB, Alloli TB. Studies on the growth and yield parameters of different genotypes of China aster (*Callistephus chinensis* Nees.). *Karnataka J. Agric. Sci.* 2013; 26 (1):107-110.
11. Panse VG, Sukhatme PV. Statistical methods for agricultural workers. ICAR New Delhi, 1995, 97-156.
12. Rajendra P. Performance of spray chrysanthemum (*Dendranthema grandiflora* Tzvelev.) cultivars in the Malwa region of Madhya Pradesh. M.Sc. Thesis, Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior. 2016.
13. Rao AM, Pratap M. Evaluation of varieties and variability studies in chrysanthemum (*Dendranthema grandiflora* Tzvelev.). *J. Orna. Hort.* 2006; 9(3):221-223.
14. Swaroopini S. Evaluation of chrysanthemum (*Dendranthema grandiflora* Tzvelev.) cultivars for growth, yield and storage life under open field conditions. M.Sc. Thesis Dr. Y.S.R. Horticultural University. Venkataramanagudem, 2013.