



## Evaluation of China aster (*Callistephus chinensis* Nees) cultivars for yield and quality parameters under hill zone of Karnataka

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**Abstract:** Studies on different cultivars of China aster for flower yield and flower quality parameters showed significant differences. Among the nine cultivars maximum number of flowers per plant was recorded in cultivar Phule Ganesh Violet (57.27), while these were least in cultivar Budiguppa Local (43.93). The flower yield and seed yield per plant was recorded highest in cultivar Phule Ganesh White (308.68 g and 8.70 g, respectively) whereas, least flower yield and seed yield per plant was noticed by cultivar Budiguppa Local (98.45 g and 2.29 g, respectively). Fresh weight, dry weight and diameter of flower were maximum in cv. Phule Ganesh White (5.70 g, 0.81 g and 6.80 cm, respectively) and were found to be superior over other cultivars.

**Key words:** China aster, Cultivar, Yield and quality

### Introduction

China aster (*Callistephus chinensis* Nees) is a free blooming annual grown all over the world for its cut and loose flowers. Among annual flowers, it ranks third next only to Chrysanthemum and Marigold (Sheela, 2008). The species consists of diverse forms, types and wide spectrum of colour ranges. China aster is a semi hardy annual commercial flower crop and belongs to one of the largest families of flowering plants, 'Asteraceae'. It is an important annual crop in India and grown throughout the world. The crop is native to China (Navalinskien *et al.*, 2005) and spread to European countries and other tropical countries during 1731 AD (Desai, 1967). The name of the genus '*Callistephus*' is derived from two Greek words '*Kalistos*' meaning 'most beautiful' and '*Stephus*', 'a crown' referring to the flower head. Though the flower yield and quality are primarily a varietal character. It is also greatly influenced by climatic factors. The climatic factors like photoperiod, temperature, relative humidity and soil moisture influence both vegetative and reproductive phases of the plant, ultimately leading to variation in the performance of cultivars. Hence, plants have to be exposed to proper climatic factors in order to get optimum and economic flower yields. The present study may help the small and marginal flower growers, to improve their productivity and better realization of income in addition to availability of quality flowers to the consumers. The investigation on performance of China aster (*Callistephus chinensis* L.) cultivars was undertaken to study the performance of different China aster cultivars for growth, flower yield and quality. The performance of China aster cultivars was studied by Poornima *et al.* (2006) and Zosiamliana *et al.* (2012).

### Material and Methods

The present investigation was carried out in the experimental field of Department of Floriculture and Landscape Architecture, College of Horticulture, Mudigere during the period from September 2013 to February 2014. The experiment was laid out in a Randomized Complete Block Design with three replications. The treatments in each replication were allotted randomly. The experiment having nine cultivars viz., Kamini, Shashank, Poornima, Phule Ganesh Violet, Phule Ganesh White, Phule Ganesh Pink, Namdhari Pink, Namdhari White and Budiguppa Local. Standard cultivation and recommended cultural practices were followed to grow a successful crop. Observations were recorded on five selected plants from each variety in each replication. The experimental observations were taken on flower quality and yield parameters. The mean values of five randomly selected plants from each cultivar in each replication were used for data analysis. The analysis of variance was carried out according to the standard procedure suggested by Panse and Sukhatme (1978).

### Results and discussion

Significant differences were observed for flower yield and flower quality parameters studied among China aster cultivars. Among the cultivars under study, cultivar Phule Ganesh Violet recorded maximum (57.27) number of flowers per plant and minimum (43.93) was recorded in cultivar Budiguppa Local. The number of flowers produced per plant may be directly related to production of more plant height, number of leaves, plant spread, number of branches and result in production of good number of developed flower buds on the branches. Highest flower yield per plant (308.68

**Table-1:** Flower yield parameters in different cultivars of China aster

Cultivar	Number of flowers/plant	Flower yield/plant (g)	Seed yield/plant (g)
Kamini	55.46	135.31	4.14
Poomima	51.10	185.65	3.83
Shashank	53.60	149.82	3.50
Phule Ganesh Violet	57.27	216.32	4.67
Phule Ganesh White	54.30	308.68	8.70
Phule Ganesh Pink	51.27	212.76	3.80
Namdhari Pink	45.47	104.44	3.22
Namdhari White	47.30	116.45	3.12
Budhiguppa Local	43.93	98.45	2.29
S. Em. $\pm$	2.62	15.42	0.34
C. D. @ 5%	7.85	46.23	1.01

**Table-2:** Flower quality parameters in different cultivars of China aster

Cultivar	Fresh wt. of flower (g)	Flower diameter (cm)	Stalk length (cm)	Dry wt. of flower (g)
Kamini	2.39	4.81	26.33	0.31
Poomima	3.65	5.90	28.20	0.49
Shashank	2.78	5.10	36.17	0.31
Phule Ganesh Violet	3.70	5.61	45.10	0.52
Phule Ganesh White	5.70	6.80	46.90	0.81
Phule Ganesh Pink	4.23	5.92	35.97	0.66
Namdhari Pink	2.20	3.43	25.27	0.31
Namdhari White	2.32	3.75	24.17	0.32
Budhiguppa Local	2.17	4.47	25.83	0.29
S. Em. $\pm$	0.21	0.23	0.93	0.02
C. D. @ 5%	0.64	0.69	2.79	0.05

g) was recorded in the cultivar Phule Ganesh White followed by cultivars Phule Ganesh Violet (216.32 g) and Phule Ganesh Pink (212.76 g) whereas, cultivar Budhiguppa Local recorded least (98.45 g) flower yield per plant. The increased flower yield was because of increased number of flowers per plant as in case cv. Phule Ganesh White. Highest seed yield per plant (8.70 g) was recorded in the cultivar Phule Ganesh White followed by cultivars Phule Ganesh Violet (4.67 g) and Kamini (4.14 g) whereas, cultivar Budhiguppa Local recorded lowest (2.29 g) seed yield per plant. The variation might be due to the cultivar ability to set seeds as it as being a genetically controlled factor. These results are in conformity with the China aster reports of Negi *et al.* (1983), Negi and Raghava (1985), Ravikumar (2002), Poornima *et al.* (2006), Munikrishnappa (2011) and Zosiamlia *et al.* (2012).

With concerned to fresh and dry weight of the flower, cultivar Phule Ganesh White recorded maximum (5.70g and 0.81g, respectively) followed by cultivar Phule Ganesh Pink (4.23g and 0.66g, respectively) and minimum (2.17g and 0.29g, respectively) was observed in the cultivar Budhiguppa Local. The weight of fresh and dry flowers is clearly in relation with the size of flowers. The greater the size of the flowers, greater would be the fresh and dry weight of flowers. Similar results were reported in marigold by Mathad (2003), Verma *et al.*, (2002) and Singh *et al.* (2003) for individual weight of flowers. With regard to flower

diameter, maximum (6.80 cm) was recorded in cultivar Phule Ganesh White followed by cultivars Phule Ganesh Pink (5.92 cm) and Poornima (5.90 cm) and cultivar Namdhari Pink recorded minimum flower diameter (3.43 cm). The variation in flower diameter may be due to the genotypic expression of the cultivars. These results are in conformity with the results reported earlier in China aster (Poornima *et al.*, 2006 and Zosiamlia *et al.*, 2012).

Stalk length was recorded maximum (46.90 cm) in cultivar Phule Ganesh White, which was on par with cultivar Phule Ganesh Violet (45.10 cm) and minimum (24.17 cm) in cultivar Namdhari White. The differences in stalk length among the cultivars might be attributed to the inherent genetic character associated with the cultivars. Similar variation in stalk length was also reported in different cultivars of China aster by Zosiamlia *et al.* (2012). According to our experiment, it can be concluded that the cultivar Phule Ganesh White proved to be the best among the cultivars under study for flower yield and flower quality parameters.

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