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***In vivo* sucker production in gerbera (*Gerbera jamesonii* Bolus ex Hook. f.) hybrid cultivars under poly shade-net structure during summer season**

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Abstract

Gerbera (*Gerbera jamesonii*) also commonly known as Transvaal Daisy belongs to the family Asteraceae. It ranks fourth in the international cut flower market. A field experiment was conducted in the year 2016-2018 to study the *In vivo* sucker production in gerbera (*Gerbera jamesonii* Bolus ex Hook. f.) hybrid cultivars under poly shade-net structure during summer season at Biotechnology and Tissue Culture Centre (BTCC), Baramunda, college of Agriculture, OUAT, Bhubaneswar. The experiment was conducted in a Complete Randomized Design (CRD) having 20 treatments i.e 20 varieties of *Gerbera jamesonii* and 3 replications. Cultivars Allian Ducassee, Snow Ball, Zembla, Scala, Rosario, Glamore, Winter Queen, Prime Rose, Salva Dore, Shimmer, Toast, Seth, Carmbole, Rihanna, Artist, Dia Bole, Inferno, Gold Strick, Amulet and Real were procured from KF-Bio plants Pvt. Ltd., Pune and planted in 12" size pots containing sterilized garden soil: FYM: Cocopeat: Sand ratio in 1:1:1 (v/v) proportions under poly shade net structure. In the experiment 20 plants per treatment were taken. The result revealed that in the month of March the cultivar Snow Ball significantly increased the number of suckers per plant (4.17). In the month of April and May the cultivar Winter Queen showed maximum number of suckers/plant (4.70) and (5.28) respectively followed by Salva Dore (5.21) in the month of May. In the month of June significantly maximum number of Sucker/plant (4.45) was observed in the cultivar Seth.

Keywords: *Gerbera jamesonii*, poly-shadenet, variety, suckers

Introduction

Gerbera (*Gerbera jamesonii*) also commonly known as Transvaal Daisy is an important cut flower grown throughout the world with long stalks and daisy-like flower, belongs to the family Asteraceae (Pattanashetti *et al.*, 2012) [10]. It is important cut flower grown throughout the world scattered from Africa to Madagascar into tropical Asia and South America (Khosa *et al.*, 2011) [5]. It is the latest sensation to Indian Floriculture, commercially grown throughout the world in a wide range of climatic conditions. The domesticated cultivars are mostly a result of a cross between *Gerbera jamesonii* and another South African species *Gerbera viridifolia*. The cross is known as *Gerbera hybrida*. They vary greatly in shape and size. Colours include white, yellow, orange, red, and pink. The centre of the flower is sometimes black. Variety in colour has made this flowering plant attractive for use in garden decorations, such as herbaceous borders, bedding, and pots and for cut flowers as it has a long vase life (Bose *et al.*, 2003; Chauhan, 2005) [1, 2]. It ranks fourth in the international cut flower market and a popular cut flower in Holland, Germany and USA (Choudhary and Prasad, 2000) [4]. There is a great demand for gerbera particularly in European markets during the winter season and almost throughout the year in India. It is difficult to get good quality cut flowers of gerbera under open field conditions. To meet the qualitative and quantitative standards, the high yielding and long lasting varieties have to be grown under protected conditions (Pattanashetti, 2009) [9]. Gerbera grown under protected conditions provide better growth, yield and quality characteristics. Under protected conditions, gerbera grows faster and produces larger and greener leaves with high dry matter content. As a result, the yield of the flowers increases and more side shoots will be formed (Sarmah *et al.*, 2014) [11]. Protected conditions provide favourable environment for the growth of the plants by protecting the crop from heavy winds, pests, diseases and other climatic conditions. The market requirement for cut flowers is very specific and it can be met consistently, only when the crop is grown under protected conditions. Gerbera as a cut flower has tremendous demand in domestic and international markets.

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Performance of gerbera genotypes varies with the region, season and growing conditions. There is introduction of new gerbera genotypes every year as there is change in growing market demand. Evaluation of gerbera genotypes under polyhouse has also been reported by earlier workers (Magar *et al.*, 2010 and Kumar *et al.*, 2012) [6, 8]. The investigation was taken with the objective to find out the most suitable cultivars for plant growth, flower quality and vase life of Gerbera under shade net conditions. The present study is one of the pillars to strengthen the edifice of floriculture industry. Considering the above facts, the present research work was undertaken to study the performance of 20 gerbera varieties

under poly shade net structure.

Materials and Methods

A field experiment was conducted in 2016-2018 at Biotechnology and Tissue Culture Centre (BTCC), Baramunda, college of Agriculture, OUAT, Bhubaneswar. The experimental design used was Complete Randomized Design (CRD) having 20 treatments i.e 20 varieties of *Gerbera jamesonii* and 3 replications. In the experiment 20 plants per treatment were taken. Different treatment details are given below in table 1.

Table 1: Description of characters of different gerbera hybrid /cultivars

Sl. No.	Cultivars	Flower of the ray florets Colour	Colour of the disc	Flower Type	Purpose
1	Allian Ducasse	Cream	Black	Semi dual	Cut flower standard
2	Snow Ball	White	Green	Semi double	Cut flower standard
3	Zembla	White	Green	Semi double	Cut flower
4	Scala	Pink	Black	Semi double	Cut flower
5	Rosario	Pink	Black	Semi double	Cut flower
6	Glamore	Lilac	Black	Semi double	Cut flower standard Gerbera
7	Winter Queen	White	Black	Semi double	Cut flower
8	Prime Rose	Pink	Green	Semi double	Cut flower
9	Salva Dore	Orange	Black	Semi double	Cut flower
10	Shimmer	White	Black	Semi double	Cut flower
11	Toast	Yellow	Black	Semi double	Cut flower
12	Seth	Lilac	Black	Pomponi	Cut flower
13	Carmbole	Red	Green	Semi double	Cut flower
14	Rihanna	Lilac	Green	Semi double	Cut flower
15	Artist	White	Black	Semi double	Cut flower
16	Dia Bole	Pink	Black	Semi double	Cut flower
17	Inferno	Red	Black	Semi double	Cut flower
18	Gold Strick	Golden yellow	Black	Single	Cut flower
19	Amulet	Yellow	Black	Semi double	Cut flower
20	Real	Orange	Black	Semi double	Cut flower

Twenty cultivars of gerbera were procured from KF-Bio plants Pvt. Ltd., Pune and planted in 12" size pots containing sterilized garden soil: FYM: Cocopeat: Sand ratio in 1:1:1 (v/v) proportions in July, 2015 under poly shade net structure. Poly shed net structure with polythene 200 micron thick, UV stabilized, anti-dust, with cooling effect and light diffusion of 75%. The shade net with 50% was used for providing shade during day to obtain optimum light intensity and to protect the crop from heavy rainfall during rainy season. The area of the structure was 500 m². To obtain optimum temperature and humidity inside the poly shade net structure foggers were and mist unit were used whenever required. The potted plants were regularly irrigated depending upon soil moisture and weather condition to keep the soil moisture optimum. Fertilizers were applied as N: P: K in the form of Urea: SSP: MOP @ 15:10:30g/m² was applied at monthly interval. Foliar spray of micronutrient (Multiplex) @ 2.5-3 ml/l at monthly interval was sprayed. Insecticide Rogor was applied (0.3%) 3gm/l to protect the plants from pests. Carbendazim @ 2g/l was sprayed as need based to control fungal disease. Hand weeding was done at regular intervals to keep the entire plot weed free. The observations were recorded in the 8 months old plant for various vegetative parameters. Among them number of sucker production was observed by calculating

number of new shoot emergence from the mother plants.

Results and Discussion

There were significant differences among 20 varieties of gerbera undertaken for experiment regarding different vegetative parameters for summer month. (Table 2). The data presented in the Table 2 revealed that in the month of March the cultivar Snow Ball significantly increased the number of suckers per plant (4.17). In the month of April and May the cultivar Winter Queen showed maximum number of suckers/plant (4.70) and (5.28) respectively followed by Salva Dore (5.21) in the month of May. In the month of June significantly maximum number of Sucker/plant (4.45) was observed in the cultivar Seth and the data stood at par with cultivars Amulet (4.29), Glamore (4.16) and Scala (4.08). The marked variation in vegetative characters may be due to differential characters of individual varieties that expressed their genetic characters. These results were conformity of findings of Kumar *et al.* (2013) [7] and Wankhede and Gajbhiye (2012) [12]. Hence, in the summer season the number of suckers per plant was maximum (5.28) in cultivar Winter Queen in the month of May and other cultivars with higher number of suckers per plant are Snow Ball, Scala, Glamore, Salva Dore, Seth and Amulet.

Table 2: Number of suckers per of gerbera cultivars in summer season (pooled over 2 years 2016 and 2017)

Sl. No.	Cultivars name	March	April	May	June
1	Allian Ducasse	2.12	1.56	2.33	1.45
2	Snow Ball	4.17	2.47	2.91	2.44
3	Zembla	3.21	3.18	1.80	2.92
4	Scala	2.55	2.09	2.45	4.08
5	Rosario	2.82	2.34	3.70	3.10
6	Glamore	2.41	3.44	4.20	4.16
7	Winter Queen	3.44	4.70	5.28	2.46
8	Prim Rose	3.26	2.35	3.33	3.14
9	Salva Dore	2.24	2.35	5.21	2.85
10	Shimmer	3.47	2.39	3.50	2.66
11	Toast	2.44	3.47	2.21	3.55
12	Seth	3.19	2.38	3.53	4.45
13	Carmbole	2.33	3.62	3.78	3.36
14	Rihanna	2.07	2.26	4.20	2.65
15	Artist	2.19	1.38	3.79	3.39
16	Dia Bolo	2.44	3.41	2.58	2.49
17	Inferno	3.18	2.76	4.18	3.68
18	Gold Strick	2.19	1.75	2.00	1.82
19	Amulet	3.18	3.42	3.33	4.29
20	Real	2.40	2.88	2.71	2.69
	SEm±	0.14	0.14	0.17	0.16
	CD 5%	0.41	0.39	0.49	0.44

**Fig 1:** Full view of Gerbera research experiment under poly shade net structure

Summary and Conclusion

Current investigation carried out under poly shade net structure for characterisation and evaluation of different vegetative parameters of *Gerbera jamesonii* revealed that maximum suckers per plant was significantly more for the cultivar Winter Queen in summer season and other cultivars with higher number of suckers per plant are Snow Ball, Scala, Glamore, Salva Dore, Seth and Amulet. Hence Winter Queen, Snow Ball and Scala could be recommended as a variety for cultivation at different agro-climatic conditions of Odisha.

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