

Growth and Flowering of Potted Gerbera (*Gerbera jamensonii* H. Bolus) cv Savanaha Grown under Shade House as Influenced by Integrated Nutrient Management

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Abstract

The present investigation on INM on potted gerbera cv Savanaha reveals that application of vermicompost at 100 g/plant + PSF at 25 g/plant + phytozeal at 30 ml/liter recommended dosage of nutrients gave the taller plants, greater spread of plant, more number of leaves and lesser leaf to flower ratio. However, it also shows that the growth is more during winter and summer months.

Key words : Growth, Flowering, Gerbera, Integrated nutrient management.

Commercial floriculture particularly cultivation of gerbera is being taken up by large number of farmers owing to an assure income. It is cultivated on commercial basis for its market preference due to its color and quality of flowers. It is cultivated in cities like Poona, Ooty and in part of Kashmir, Sikkim, West Bengal and Karnataka. Even though fertilizer recommendations are available for this crop, information on integrated nutrient management is lacking. Due to raising cost of fertilizers, it has become imperative to arrive at an INM schedule for this crop to achieve better growth and flowering at economized use of plant nutrients. Hence an attempt was made using vermicompost, pressmud, phosphorus solubilising fungi, phytozeal along with recommended nutrient dosage alone and in combination under shade house as it is a shade living plant.

Methods

The experiment was conducted during June 2002 to March 2003 at the Division of Horticulture, University of Agricultural Sciences, Bangalore. The variety of chosen was Savanaha. Experiment compared seven treatments laid out in a complete block designs with three replications. The treatments included inorganic form of N, P₂O₅ and K₂O at 10:15:20 g/sq m alone and in combination with vermicompost, pressmud, phosphorus, solubilizing fungi and phytozeal. Application of FYM at 10 t/ha and recommended nutrients was

constant for all treatments. The plants were grown in pots under 50% shade house conditions. The growth observation was recorded for every plant in each replication at seasonally interval. Also the first flower but emergence and opening completely were recorded.

Results and Discussion

Height of Plant (cm)

Influence of INM on height of plant differed significantly among different treatments in all seasons (Table 1). Applications of vermicompost at 100 g/plant + PSF at 25/plant + phytozeal at 30 ml/liter along with recommended dosage of nutrients produced taller stature plants in all seasons. However, in summer season maximum plant height (44.50 cm) was recorded compared to control (37.20 cm) in the same season. This could be due to extra nutrient usage of vermicompost and growth regulating substances supplied by phytozeal. Similar results were in consonance with findings of Seetha (1) in gerbera and Nethra et al. (2) in China aster.

Spread of Plant (dm²)

Significant difference in spread of plant through out the plant growth. However, during winter season (December, 02) the plant recorded greater spread (13.55

Table 1. Influence of INM on height (cm) and spread (dm²) of potted gerbera cv Savanaha grown under shade house.

Treatments	Height of plant (cm)					Spread of plant (dm ²)				
		Rainy	Winter	Summer		Rainy	Winter	Summer		
	Aug 02	Sep 02	Dec 02	Jan 03	Mar 93	Aug 02	Sep 02	Dec 02	Jan 03	Mar 03
T1 : Control (recommended dosage of nutrients)	30.67	31.67	33.50	35.83	37.20	10.20	10.38	11.03	10.98	10.68
T2 : Recommended dosage of nutrients+vermicompost 100 g/plant	30.17	32.33	35.67	38.50	41.93	11.25	11.52	11.85	11.70	11.50
T3 : Recommended dosage of nutrients + pressmud 50 g/plant	30.75	31.67	35.58	37.75	39.80	10.55	10.28	11.55	11.05	11.20
T4 : Recommended dosage of nutrients+PSF (<i>Aspergillus awamorii</i>) 25 g/plant	32.67	32.00	34.17	37.16	40.25	10.22	10.72	11.00	11.75	10.73
T5 : Recommended dosage of nutrients+phytozeal 30 ml/l	31.67	31.58	34.70	37.41	39.43	10.87	11.13	11.80	13.50	11.50
T6 : Recommended dosage of nutrients+vermicompost 100 g/plant + PSF 25 g/ plant + Phytozeal 30 ml/l	33.42	34.58	38.17	42.25	44.50	11.45	12.05	13.55	13.50	13.00
T7 : Recommended dosage of nutrients + pressmud 50 g/plant + PSF 25 g/plant + phytozeal 30 ml/l	33.28	34.03	36.58	40.75	42.70	10.75	11.85	13.00	13.05	12.70
SE ±	0.87	0.71	0.46	1.18	1.76	0.16	0.20	0.13	0.10	0.12
CD at 5%	NS	NS	1.42	3.58	NS	0.51	0.63	0.39	0.30	0.17

dm²). When compared to control (11.03 dm²), when plant treated with vermicompost at 100 g/plant + PSF at 25 g/plant + phytozeal at 30 ml/liter along with recommended dosage of nutrients (Table 1).

Table 2. Influence of INM on number of leaves per plant and leaf area (cm²) per plant in potted gerbera cv Savanaha grown under shade house.

Treatments	Number of leaves/plant					Leaf area (cm ²)/plant				
		Rainy	Winter	Summer		Rainy	Winter	Summer		
	Aug 02	Sep 02	Dec 02	Jan 03	Mar 03	Aug 02	Sep 02	Dec 02	Jan 03	Mar 03
T1 : Control (recommended dosage of nutrients)	10.78	11.33	13.22	14.55	16.67	92.50	106.83	123.5	122.25	117.25
T2 : Recommended dosage of nutrients + vermicompost 100 g/plant	10.78	11.44	14.22	15.11	17.33	95.67	109.83	139.43	134.80	130.65
T3 : Recommended dosage of nutrients + pressmud 50 g/plant	10.00	10.89	13.33	14.22	17.00	94.50	109.62	132.08	129.45	126.25
T4 : Recommended dosage of nutrients + PSF (<i>Aspergillus awamorii</i>) 25 g/plant	9.11	10.33	13.00	15.22	17.55	89.23	101.95	128.70	126.70	123.33
T5 : Recommended dosage of nutrients + phytozeal 30 ml/l	10.89	11.78	13.50	14.50	17.21	88.50	102.52	125.25	123.43	118.25
T6 : Recommended dosage of nutrients + vermicompost 100 g/plant + PSF 25 g/plant + phytozeal 30 ml/l	9.78	10.11	15.22	16.88	21.55	97.10	115.57	149.77	147.62	140.25
T7 : Recommended dosage of nutrients + pressmud 50 g/plant + PSF 25 g/plant + phytozeal 30 ml/l	11.33	10.44	14.72	16.77	20.22	95.65	113.50	145.25	142.72	135.35
SE ±	0.58	0.39	0.56	0.71	1.06	1.56	1.49	1.27	1.06	1.59
CD at 5%	NS	NS	1.72	2.16	3.22	4.75	4.53	3.86	3.23	4.84

Table 3. Influence of INM on leaf to flower ratio and number of offsets per plant in potted gerbera cv Savanaha grown under shade house.

Treatments	Leaves to flower ratio					Number of offsets
	Rainy		Winter		Summer	
	Aug 02	Sep 02	Dec 02	Jan 03	Mar 03	
T1 : Control (recommended dosage of nutrients)	8.58	7.71	6.72	7.84	10.66	2.33
T2 : Recommended dosage of nutrients + vermicompost 100 g/plant	7.86	6.95	5.45	6.12	7.73	2.66
T3 : Recommended dosage of nutrients + pressmud 50 g/plant	7.92	6.77	5.52	6.08	8.06	2.33
T4 : Recommended dosage of nutrients + PSF (<i>Aspergillus awamorii</i>) 25 g/plant	8.80	6.97	5.97	6.40	9.18	2.33
T5 : Recommended dosage of nutrients + phytozeal 30 ml/l	8.41	7.67	6.42	6.76	10.11	2.00
T6 : Recommended dosage of nutrients + vermicompost 100 g/plant + PSF 25 g/plant + phytozeal 30 ml/l	7.27	5.36	4.50	4.98	6.94	3.00
T7 : Recommended dosage of nutrients + pressmud 50 g/plant + PSF 25 g/plant + phytozeal 30 ml/l	8.71	6.53	5.02	5.38	7.32	3.33
SE ±	0.94	0.84	0.44	0.50	0.80	0.12
CD at 5%	NS	NS	1.34	1.52	2.41	0.37

Number of Leaves per Plant

Application of vermicompost at 100 g/plant + PSF at 25 g/plant + phytozeal at 30 ml/liter along with rec-

Table 4. Influence of INM on days taken for first flower bud emergence and opening of flower completely of potted gerbera cv Savanaha grown under shade house.

Treatments	Days taken for emergence of first flower bud	Days taken for first flower bud opening completely
T1 : Control (recommended dosage of nutrients)	27.67	8.89
T2 : Recommended dosage of nutrients + vermicompost 100 g/plant	33.00	9.35
T3 : Recommended dosage of nutrients + pressmud 50 g/plant	34.00	8.77
T4 : Recommended dosage of nutrients + PSF (<i>Aspergillus awamorii</i>) 25 g/plant	35.33	8.22
T5 : Recommended dosage of nutrients + phytozeal 30 ml/l	36.00	9.44
T6 : Recommended dosage of nutrients + vermicompost 100 g/plant + PSF 25 g/plant + phytozeal 30 ml/l	32.33	8.77
T7 : Recommended dosage of nutrients + pressmud 50 g/plant + PSF 25 g/plant + phytozeal 30 ml/l	31.33	9.11
SE ±	2.06	0.75
CD at 5%	NS	NS

ommended dosage of nutrients resulted in more number of leaves (21.55 leaves/plant) when compared to control (16.67 leaves/plant) during summer season (Table 2). This could be resultant of vermicompost and recommended nutrient dosage, which lead to enhanced level of nitrogen coupled with growth promoting substances of phytozeal. Similar results were obtained in gerbera (1) by applying vermicompost at 15 t/ha + 100% recommended dosage of NPK and also in marigold (3).

Leaf Area (cm²)

Leaf area per plant differed significantly between in all season. Maximum leaf area (144.77 cm²) when compared to (123.5 cm²) in control (Table 2) was recorded with application of vermicompost at 100 g/plant + PSF at 25 g/plant + phytozeal at 30 ml/liter + recommended dosage of nutrient during winter season (December 02).

Leaf to Flower Ratio

Treating plants with vermicompost at 100 g/plant + PSF at 25 g/plant + phytozeal at 30 ml/liter along with recommended dosage of nutrients resulted in production of leaf to flower ratio (4.50) during winter (December 02) season, when compared to control

(6.72) (Table 3). This might be due to efficient utilization of nutrients especially phosphorus and micro-nutrient content.

Number of Offsets per Plant

Significantly higher number of offsets per plant (3.33) were recorded when plants treated with pressmud at 50 g/plant + PSF at 25 g/plant + phytozeal at 30 ml/liter + recommended dosage of nutrient compared to other treatment at the end of six months of plant growth (Table 3). Kale et al. (4) also observed similar trend in salvias due to vermicompost treatment.

Days Taken for First Flower Bud Emergence and Opening for Harvesting

INM did not produce any pronounced effect on number of days taken for first flower bud emergence

and opening for harvesting, giving an indication that the characters are under the control of the cultivars and season (Table 4).

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