Effect of Integrated Nutrient Management Practices on Growth and Flower Yield of China Aster [*Callistephus Clinensis* (L.) Ness] cv Princess

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ABSTRACT

A field experiment was conducted at the Gwalior (Madhya Pradesh) during 2009 to study the effect of recommended dose of fertilizer (NPK), vermi-compost on the basis of RDN, Azotobactor and PSB on growth and flower yield of China aster. The results indicated that Maximum height of plant, maximum height of diameter, maximum width of leaves, maximum date of blooming and full blooming per harvesting of floral heads, maximum number of leaves and Maximum length of longest leaf were significantly increased with 75% NPK + Vermi-compost + Azotobactor + PSB followed by under treatment 50% NPK + Vermi-compost + Azotobactor + PSB. maximum weight of floral heads, Maximum length of floral head, Maximum width of floral heads, maximum length of floral stalk, Maximum number of floral heads, maximum fresh weight of floral head per plant, Maximum fresh weight of floral head were significantly increased with 50% NPK + Vermi-compost + Azotobactor + PSB followed by 75% NPK + Vermi-compost + Azotobactor + PSB.

Keywords: china ester, fertilizer, vermi-compost, Azotobactor and PSB

1. INTRODUCTION

China aster [*Callistephus chinensis* (L.) Ness] cv. Princess is one of the most popular excellent as a cut flowers as well as loose flower grown throughout the world. It is grown on a commercial scale in many parts of India. China aster is a free blooming, colourful annual flower and belongs to the family *Asteraceae*. Among annual flowers it ranks next to chrysanthemum and marigold. It is grown throughout the world under different conditions such as open fields and cloth houses.

The flowers of aster have wide range of colours, size and shape with good keeping quality. Besides, it is also used as bedding plant, potted plant and for other floral decorations such as making garlands, bouquets etc. The colour range is so great that today China aster is one of the most valuable garden flowers. In all the different types, the colours include pure white, many shades of pink, pale blue, purple, dark blue and scarlet. The pure yellow colour is not found in aster (Randhawa and Mukhopadhyay, 2000).

2. MATERIALS AND METHODS

A field experiment was conducted at Research Farm, College of Agriculture, Rajmata Vijyaraje Sindhiya Krishi Vishwa Vidyalaya, Gwalior (Madhya Pradesh) during *kharif*-2009. The soil of the experimental plot was sandy loam and slightly alkaline in reaction (pH 7.7) as well as low in available nitrogen (178.5 kg/ha.), medium in available phosphorus (26.8 kg/ha.) and high in available potash (353.0 kg/ha.). The experiment comprising of twenty four treatment combinations consisting recommended dose of fertilizer (NPK), vermi-compost on the basis of RDN, Azotobactor and PSB, were laid out in randomized block design with three replications. The crop was sown on October 21, 2009 and harvested in Febuary 28, 2010. Five plants were selected randomly from each experimental unit to measure the growth and yield attributes.

3. RESULTS AND DISCUSSION

Effect on growth

The growth parameters, viz., Height of the plant (cm), diameter of main stem (cm) number of leaves per plant (cm), length of the longest leaf (cm) and width of the longest leaf (cm) were significantly influenced by fertilizer levels. Significantly superior aforesaid characters were observed with application of 75% NPK + Vermicompost + Azotobactor + PSB over application of 50% NPK + Vermi-compost + Azotobactor + PSB, while date of full blooming per harvesting of floral heads was significantly superior aforesaid characters were observed with application of 50% NPK + Vermi-compost + Azotobactor + PSB.

This might have resulted due to better and timely availability of N and P_2O_5 for their utilization by plant. However, both the levels were statistically comparable in respect of Height of the plant (cm), diameter of main stem (cm) number of leaves per plant (cm), length of the longest leaf (cm) and width of the longest leaf (cm).

Effect on development

Date of full blooming per harvesting of floral heads (days), Fresh weight of floral heads (g), Length of floral head (cm), Width of floral heads (cm), Length of floral stalk (cm), Number of floral heads per plant and Fresh weight of floral heads (g/plant) were significantly influenced by fertilizer levels. Significantly superior aforesaid characters were observed with application of 50% NPK + Vermi-compost + Azotobactor + PSB over application of 75% NPK + Vermicompost + Azotobactor + PSB and other treatments.

4. CONCLUSION

On the basis of one year field experimentation, it seems quite logical to conclude that better growth parameters and development and Maximum net monetary return (Rs 2, 10, 581.9/ha) from China aster can be secured by (75% NPK+ Vermi-compost + Azotobactor +PSB) and produced

maximum flower yield (167.96 q/ha) can be secured by (50% NPK+ Vermi-compost + Azotobactor +PSB) under the agro-climatic conditions of Gwalior region.

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Table 1 Effect of integrated nutrient management practices on growth and flower yield of China aster

Treatment	Plant height (cm)	Diameter of Main stem	No. of leaves	Length of longest leaves	width of leaves	Date of full blooming/ harvesting of floral heads	Fresh Weight of floral Head /plant	Length of floral head	width of floral head	length of floral stalk	No. of floral head	Fresh weight of floral head
Levels (kg/ha)												
100% NPK	43.00	1.55	141.40	8.42	7.68	83.35	90.02	4.65	4.55	25.77	44.92	2.57
125% NPK	44.38	1.58	144.00	8.55	7.78	84.35	91.00	4.75	4.67	27.45	47.02	2.62
75% NPK+VC+PSB	40.98	1.44	138.03	8.32	7.53	81.33	82.75	4.45	4.28	24.02	43.80	2.27
75% NPK + VC + Azotobactor	41.97	1.51	140.10	8.37	7.65	82.40	85.00	4.55	4.45	25.23	42.73	2.32
75% NPK + VC+ Azotobactor + PSB	51.57	1.72	154.22	9.16	8.19	88.33	99.27	5.28	5.02	30.31	50.03	3.20
50% NPK + VC+ PSB	35.01	1.25	132.87	7.37	7.27	78.25	81.02	3.62	3.48	20.33	38.08	1.73
50% NPK + VC + Azotobactor	37.25	1.28	135.19	7.40	7.30	80.27	77.88	3.52	3.42	16.23	36.41	1.68
50% NPK + VC + Azotobactor + PSB	48.47	1.63	149.49	8.93	8.10	87.92	101.18	5.35	5.13	32.62	52.18	3.25
C.D. at 5%	4.665	0.136	5.875	0.304	0.406	3.814	3.449	0.524	0.501	1.144	1.584	0.580