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Effect of GA₃ on flower yield and quality of different varieties of perennial Chrysanthemum

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Abstract

A field experiment was conducted for observing the effect of GA₃ spray at 30th and 60th days after Transplanting on yield and quality of four varieties of perennial chrysanthemum viz, Sonali Tara, Shubhra, Pandhri Rewadi, Piwadi Rewadi. Application of GA₃ 150 ppm enhanced number of flower per plant obtained in shubhra with GA₃ 150 ppm and Yield of flower per plant (g), Yield flower per plot (kg) and yield of flower per ha. (q) in Piwadi Rewadi with GA₃ 150 ppm and also Diameter of fully opened flower (cm) and weight of fully opened flower (g), Diameter of flower disc (cm), Shelf life of flower (days) in variety of Piwadi Rewadi.

Keywords: Chrysanthemum, GA₃, different varieties, yield and quality

Introduction

An experiment was conducted to study the effect of GA₃ on yield and quality of different varieties of chrysanthemum. The word chrysanthemum comes from two Greek words, Chryso- golden and anthos - flower which means golden flower. It is a member of family Asteraceae. The chrysanthemum has earned tremendous popularity as an ornamental flower for the garden, as cut flower for interior decoration or for the green house cultivation. The flower are used as cut flower and loose flower are used for making garlands, veni, bouquets and for worship. The dwarf and compact growing plants are used in flowerbed, mixed borders, edging, pot plants, hanging baskets, window boxes and front row planting. The aesthetic value contain species like Chrysanthemum cinerariifolium and Chrysanthemum coccineum are also cultivated as sources of pyrethrum, as important insecticide.

Material and Method

The investigation was carried out during kharif seson at the Horticulture section, section of Horticulture college of Agriculture, Nagpur (M.S.). The experiment was laid out factorial randomized block design with three replication and sixteen treatment combination. Main factor comprised of four chrysanthemum varieties viz. Sonali Tara (v₁), Shubhra (v₂), Piwadi Rewadi(v₃) and Pandhri Rewadi (v₄) and sub factor comprised of four foliar spraying treatment; control +water spray(G₀), 50 ppm, 100 ppm, 150 ppm GA₃ was sprayed as per treatment at 30 and 60 days after transplanting having spacing 45 x 30. The intercultural operation were followed as and when required. The experiment was layout in FRBD design and data on flower yield and quality were recorded during the course of investigation and subjected to statistical analysis as per Panse and Sukhatme (1967).

Result and Discussion

The result revealed that, The chrysanthemum variety maximum yield number of flower per plant recorded in Shubhra Piwadi Rewadi had recorded significantly yield of flower per plant (g), yield of flower per plot (kg), yield of flower per ha. (q). From the above result varieties maximum number of flower per plant were recorded in variety Shubhra (73.62) and followed by the variety Piwadi Rewadi (67.50) and significantly maximum yield of flower per plant (173.37g), flower yield per plot (2.77kg) and flower yield per ha. (12.82 t) recorded in Piwadi Rewadi), This result may be attributed to variation in the genetic constitution of different varieties. Similar result were reported by Joshi *et al.* (2008) [3] in chrysanthemum. Similar result was reported by Kulkarni and reddy (2006) [4] and Rakesh *et al.* (2005) in chrysanthemum. Spraying with GA₃ 150 ppm resulted in maximum number of flower per plant (63.29), yield of flower per plant (131.17g), yield of flower per plot (2.09 kg), yield of flower per ha. (9.68 t).

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This might due to greater dry matter accumulation which certainly suggestive of better photosynthesis other metabolic activities and timely uptake of nutrient. The increase in weight of flower was directly on number of flower and size of flower. Bigger size of flower directly depend on presence and rate of activity of gibberellins in the developing flower buds, similar results were reported by Girwani *et al.* (1990) [1] in marigold and Singatkar (1995) in gaillardia. The interaction effect due to varieties and GA₃ on number of flower per plant, Yield of flower per plant, yield of flower per plot, Yield of flower per ha.were found to be non-significant. Diameter of flower of fully opened flower (6.28 cm), weight of fully opened flower from (2.76 g), Diameter of flower disc (1.44 cm) from each treatment of plots and average diameter of

flower disc was recorded, Shelf life of loose flower (5.88 Days) were significantly maximum noted with the GA₃ 150 ppm. The higher effectiveness of GA₃ might be the attributed to higher auxine activity which has been reported to delay senescence and enhance translocation of metabolites GA₃ reduce the water loss and has anti-senescence properly leading to increase in shelf life. Similar results have been reported by Lal and Mishra (1986) [6] in African marigold and Aster, Talukdar and paswan (1996) [9] in chrysanthemum, Kumar and Ugheria (1998) in chrysanthemum. The interaction effect due to the varieties and GA₃ on diameter of fully opened flower, Diameter of flower disc, weight of fully opened flower, shelf life of loose flower found to be non-significant.

Table 1: Effect of GA₃ on flower yield and quality of different varieties of chrysanthemum

Treatments	No. of flower / plant	Yield of flower /plant (g)	Yield of flower /plot (kg)	Yield of flower /ha. (q)
V ₁ -Sonali Tara	59.66	103.81	1.65	7.62
V ₂ -Shubhra	73.62	132.95	2.12	9.81
V ₃ -Piwadi Rewadi	67.50	173.37	2.77	12.82
V ₄ -Pandhri Rewadi	25.05	66.21	1.06	4.90
CD at 5%	1.41	11.76	0.18	0.86
G ₀ -Control	49.11	103.51	1.65	7.65
G ₁ -50 ppm	54.7	117.19	1.87	8.65
G ₂ -100 ppm	58.71	124.22	1.98	9.14
G ₃ -150 ppm	63.29	131.17	2.09	9.68
CD at 5%	1.41	11.76	0.18	0.86
Interaction effect (VXG)				
CD at 5%	N.S.	N.S.	N.S.	N.S.

Table 2: Shows the diameter of fully opened

Treatments	Diameter of fully opened flower (cm)	Disc diameter of flower (cm)	Wt. of fully opened flower (g)	Shelf life of flower (Days)
V ₁ -Sonali Tara	4.26	0.44	1.76	2.37
V ₂ -Shubhra	5.00	0.66	1.81	3.40
V ₃ -Piwadi Rewadi	6.28	1.44	2.84	5.88
V ₄ -Pandhri Rewadi	6.19	0.41	2.71	3.83
CD at 5%	0.36	0.12	0.11	0.19
G ₀ -Control	5.17	0.65	2.16	3.26
G ₁ -50 ppm	5.30	0.70	2.25	3.80
G ₂ -100 ppm	5.53	0.74	2.30	3.98
G ₃ -150 ppm	5.71	0.85	2.38	4.42
CD at 5%	0.36	0.12	0.11	0.19
Interaction effect (VXG)				
CD at 5%	N.S.	N.S.	N.S.	N.S.

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