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Research Note :

EFFECT OF $AgNO_3$ AND 8-HQC ON VASE LIFE OF CUT ROSES

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Flowers form an integral part of our rich heritage and culture as we have tradition in floriculture. In the last two decade with changing life styles and rapid urbanization, floriculture has assumed a definite commercial status in India. In India roses are grown for cut flowers, making essential oil, rose water and *gulkand*. First Red and Grand Gala both are the important cultivars of cut rose. 8-hydroxy quinoline citrate (8-HQC) is a very important and effective germicide used in floral industry (Butt, 1). Thus, incorporating 8-HQC either in vase solution or as pulse would restrict the microbial growth and subsequent vascular blockage and thus promote water uptake.

But very little work has been done to prolong the vase life of cut roses and still lot needs to be done. None of the workers has suggested clear-cut recommendation about chemicals and their concentration for adoption to the vase life of cut roses. Keeping the above fact in view, an investigation was carried out to study "effect of $AgNO_3$ and 8-HQC on vase life of cut roses" during July 2010 in the laboratory of Department of Horticulture, Ch. Charan Singh University Campus, Meerut (U.P.) India.

The cut flowers having 42-44 cm stem length were harvested in the morning between 7.00 am to 8.00 am at tight bud stage, when only one or two petals had unfolded, with the help of a clean and sharp secateur. The cut flowers were then brought to the laboratory in a bucket containing fresh tap water. The stem ends were then re-cut to uniform length of 40 cm each and retained only four uppermost leaves.

After recording the fresh weight of each cut stem in the laboratory the cut flowers were kept in 50 ppm and 100 ppm solution of $AgNO_3$ and 100 ppm and 200 ppm 8-HQC under ambient condition of 32 ± 2°C temperature and 50-75% relative humidity. There were ten treatments in all, each cultivar having four and two was of control, replicated thrice in completely randomized design (CRD) and the flowers taken per replication were four and finally the vase life and quality of cut roses were evaluated in the test tubes containing of 150 ml holding solution.

Vase life in days was counted from the time when the cut flowers were kept in vase till senescence. The end of useful vase life or senescence symptoms was marked either by appearance of bent neck, bluing of petals in case of the flowers, wilting, blackening or drying of outer petals or opening at centre petal drop and colour fading etc.

The use of 8-HQC is well known in cut flowers as it acts as an bactericides for improving the vase life of cut rose, while $AgNO_3$ which acts as an anti ethylene also helps in enhancing the flower diameter and vase life of cut roses. Treatment with $AgNO_3$ (50ppm) and 8-HQC (200 ppm) significantly increased the fresh weight of flowers over the control (distilled water). Higher gain in fresh weight was associated with longer vase life. Initial increment of fresh weight until 3rd day after harvest was also observed by Shiva and Bhattacharjee (4). Pulsing or holding solution increases the total starch content of the petals over the untreated control as starch content was positively associated with vase life as obtained by Mariam *et al*. (3). Solution containing 8-HQC limits the number of bacteria in stems. Similarly, effect of $AgNO_3$, which is also an antiethylene agent, enhance the flower diameter and water

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Table 1: Effect of $AgNO_3$ and 8-HQC on vase life of cut roses.

Treat-ments	Concen-trations (ppm)	Fresh weight change (g)						Flower diameter (cm) on 3rd day in vase		Water uptake (ml)				Vase life (days)	
		Fresh Weight		At senescence		Grand Gala				on 3rd day in vase		At senescence			
		cv.		cv.		cv.				cv.		cv.		cv.	
		First Red	Grand Gala	First Red	Grand Gala	First Red	Grand Gala	First Red	Grand Gala	First Red	Grand Gala	First Red	Grand Gala	First Red	Grand Gala
$AgNO_3$	50 (T_1)	14.71	16.5	+ 1.83	+ 1.72	- 0.64	- 0.73	8.19	6.65	10.54	9.60	11.17	10.35	8.70	7.60
	100 (T_2)	14.32	16.71	+ 1.45	+ 2.29	- 1.03	- 0.62	7.92	6.93	8.27	8.78	19.83	12.55	8.32	7.36
8-HQC	100 T_3	12.05	13.29	+ 2.75	+ 2.30	- 0.64	- 1.08	8.58	6.62	12.53	11.22	19.45	17.25	9.79	7.89
	200 T_4	13.61	13.29	+ 3.55	+ 2.40	- 0.69	- 1.21	8.24	6.82	21.86	12.73	27.51	17.25	9.55	7.50
Control	Distilled Water T_5	11.45	15.2	+ 2.41	+ 2.10	- 1.44	- 0.99	6.27	5.78	9.77	8.85	19.14	10.02	5.35	4.25
C.D (P=0.05)		0.123	0.275	0.073	NS	0.040	0.033	0.041	0.061	0.151	0.042	0.274	0.097	0.186	0.096

uptake of cut rose cv. 'First Red' and cv. 'Grand Gala.'

Doorn *et al*. (2) reported enhancement in vase life of cut roses blooms treated with $AgNO_3$ and 8-HQC. Further experiment conducted on rose cv. 'First Red' and 'Grand Gala' presents enhanced water uptake and flower diameter over control. In the experiment vase life of cut flower under different treatments was determined in vase holding solution *i.e.,* 50 ppm, 100 ppm, $AgNO_3$ and 100 ppm, 200 ppm 8-HQC.

The cut rose cv. First Red showed the maximum diameter at 100 ppm 8-HQC, while as in cv. Grand Gala 100 ppm $AgNO_3$ showed maximum flower diameter on 3^{rd} day in vase. The maximum vase life of cut roses cv. First Red and Grand Gala was recorded in 8-HQC at 200 ppm and 100ppm. The above findings shows that the chemical response of $AgNO_3$ was best for increasing the fresh weight of cut flowers, while as the maximum vase life of cut flowers were recorded when treated with 8-HQC which act as bacteriocide and improves the flower diameter, water uptake and vase life of cut rose flowers. However, the comparison or varietal difference was found to be best in cv. First Red in comparison to cv. Grand Gala in terms of its fresh weight (g), flower diameter (cm) and vase life.

From the results obtained (Table 1) it can be concluded that holding the cut rose cv. First Red and cv. Grand Gala in the solution of 8-HQC at 200 ppm was most effective in promoting the fresh weight and water uptake cut rose of flowers.

The cut rose cv. First Red and Grand Gala treated with $AgNO_3$ and 8-HQC at 100 ppm and 200 ppm increased the flower diameter, however, the maximum flower diameter was recorded in cv. First Red at 100 ppm 8-HQC, while in cv. Grand Gala maximum diameter was recorded at 100 ppm $AgNO_3$. The keeping quality of cut rose, treated with $AgNO_3$ and 8-HQC chemicals showed better results at 100 ppm 8-HQC in which maximum vase life was obtained in cv. First Red and in also in cv.

Grand Gala in comparison to control confirming to results of Son *et al.* (5).

Form the experimental findings, it was observed that cv. First Red has more vase life in comparison to cv. Grand Gala. It is concluded from investigation that 8-HQC enhances the fresh weight, flower diameter, water uptake and vase life of cut roses at 100 ppm and 200 ppm.

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