

EXTENSION OF VASE-LIFE OF CUT SUNFLOWERS BY USE OF CERTAIN CHEMICALS

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Specific concentration of NAA, CCC, B₉, AgNO₃, CaCl₂, CoCl₂ and silver thiosulphate (STS) were used in various treatment techniques-basal, pretreatment, pulsing and spraying to defer senescence and to increase the vase-life of cut sunflowers. Pulsing of cut flowers with STS was more effective in deferring senescence than other treatments. The increase in vase-life of cut sunflower was 2 days by STS treatment.

Keywords: Cut flower; Senescence; Sunflower; Vase-life.

The extension of vase-life and improved, post-harvest development and maintenance of cut flower have significant economic value. These effects can be brought about by proper post-harvest cut flower handling techniques based on a preservative solution ensuring an ample supply of water, metabolites and regulatory substances to petals and leaves. The efficiency of the aqueous solutions of various chemical compounds on the post harvest life of many cut flowers has been tested previously¹⁻⁵. The present work aims at developing a specific chemical, better than those now used to extend the vase-life of cut sunflowers.

Sunflower (*Helianthus annuus* L. Cultivar. Japanese miniature), seeds of pure line breeding varieties were collected and were sown in July in seed pans. After transplantation, the plants were grown in the field. Sunflower plants reached the reproductive stage after 80 ± 10 days. The plants were irrigated at regular intervals and the salt content of the irrigated water never exceeded 0.02%. The day temperature was $30 \pm 2^\circ\text{C}$ and the night temperature was $28 \pm 2^\circ\text{C}$. Natural photoperiod varied between 10 to 13 hrs.

The flower shoots were cut at a uniform length of 8 cm and all the leaves

were removed from the shoot to eliminate the effect of leaves on flower or petal senescence. The flowers were kept individually in uniform sized test tubes containing the various treatment solutions. Cut flowers kept in water acted as controls. Specific concentrations of NAA, CCC, B₉, AgNO₃, CaCl₂, CoCl₂ and silver thiosulphate (STS) were used in various treatment techniques - basal, pretreatment, pulsing and spraying to defer senescence and to increase the vase-life of cut sunflowers (Table-1). The cut flowers were held at the following conditions : temperature $28 \pm 2^\circ\text{C}$, relative humidity 40%, irradiance 12 Wm^{-2} at flower level for 12 hrs per day using Philips fluorescent tubes. The bases of the flower shoots were recut on alternate days.

The vase-life of the cut sunflowers in the various treatment techniques has been shown in Table-1. Pulsing of cut flowers for 10 min with silver thiosulphate was more effective in deferring senescence than the other treatments. The vase-life of control flowers was 6 days, but it was 8 days in silver thiosulphate pulsed cut flowers. The procedure to extend the vase-life was demonstrated to be feasible with orchids⁶⁻⁸, *Lathyrus*⁹ and *Chrysanthemum*².

Table 1. Vase-life of the flowers of *Helianthus annuus* L. (Cultivar Japanese miniature) treated with some chemicals.

Chemical	Concentration	Treatment	Time	Vase-life (in days)
Control	--	--	--	6
NAA	10 ⁻⁴ M	Basal	--	7
CCC	50ppm	Pretreatment	12 hrs	7.5
B ₉	10ppm	Basal	--	7
AgNO ₃	1000ppm	Pulsing	10min	
	+	+		
	100ppm	Spray	--	6.5
CaCl ₂	200 µm	Pretreatment	24 hrs	6.5
CaCl ₂	200 µm	Pretreatment	48 hrs	7
CoCl ₂	100 µm	Basal	--	6.5
CoCl ₂	200 µm	Pretreatment	24 hrs	7
STS	4 mM AgNO ₃			
(Silver Thio Sulphate)	+			
	16 mM Na ₂ S ₂ O ₃	Pulsing	10min.	8

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