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Study on advance storage and chemical treatments to enhance the shelf life of tuberose

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Abstract
India has very old and long tradition of flower cultivation. Floriculture in India is being viewed as a rapidly growing industry. The important floricultural crops in the international flower trade are rose, carnation, chrysanthemum, gerbera, orchids, anthurium, tulip, lilies, *etc*. All the flowers and ornamentals are the most perishable commodities needs special care during harvesting, handling, storage and transport. Due to perishable nature of flowers, there is huge post-harvest loss ranging from 30-50 per cent. In India, this could be on a higher side, which might be due to lack of knowledge on 'post-harvest handling' of cut flowers. These losses can only be minimized by proper handling, packaging, storage, marketing and processing of flowers. In this study, tuberose spikes were placed in different chemicals to improve shelf life stored in room and cold temperature under wet and dry storage conditions.

Keywords: Advance storage, chemical treatments, enhance, shelf life, tuberose

Introduction
Tuberose is one of the highly valuable flowers used in perfume and scent industry. People prefer tuberose, because of its use as cut flowers, boquet arrangements and indoor decorations. For enhancing the quality and improving the vase life of Cut flowers, many chemicals like as Silver nano, sucrose, $Al_2(SO_4)$, $CoCl_2$, etc are used as preservatives. After dipping in chemical preservatives, two different storage has been followed such as dry and wet storage by keeping in room and cold chamber (8°C). Wet storage is placing the flowers with their base solution. Dry storage is after dipping the flowers in solution it is wrapped and stored.
Sucrose (4%) maintains the pool of dry matter and respirable substrates in flower petals. Exogenous sucrose replaces the depleted endogenous carbohydrates utilized during the post-harvest life of flowers. It gets accumulated in the flower tissues, increases their osmotic concentrations and improves their ability to absorb water and maintain turgidity.
Silver nano (140 ppm), an antimicrobial compound is applied as pulse treatment in preservative solution for cut flowers. It strongly inhibits microorganisms activities because its surface to volume ratio is high. It releases silver ions which interact with nucleic acid (lose of DNA replication) and cytoplasm components and prevents respiratory enzymes, dissipates the proton motive force and also decreases membrane permeability and finally cell death.
$Al_2(SO_4)$ (800 ppm) – it acidifies the holding solution, reduces bacterial growth and improves water uptake (Halevy and Mayak, 1981) [1]
$CoCl_2$ (75 ppm) – it improves longevity and flower quality of cut flowers by inhibiting vascular blockage, closing stomata (Reddy, 1988) [2]

Materials and methods
T1- sucrose (4%) + wet storage + room temperature
T2- sucrose (4%) + dry storage + room temperature
T3- sucrose (4%) + wet storage + cold temperature
T4- sucrose (4%) + dry storage + cold temperature
T5- $Al_2(SO_4)$ (800 ppm) + wet storage + room temperature
T6- $Al_2(SO_4)$ (800 ppm) + dry storage + room temperature
T7- $Al_2(SO_4)$ (800 ppm) + wet storage + cold temperature
T8- $Al_2(SO_4)$ (800 ppm) + dry storage + cold temperature
T9- $Al_2(SO_4)$ (800 ppm) + Sucrose (4%) + wet storage + room temperature
T10- $CoCl_2$ (75 ppm) + wet storage + room temperature
T11- $CoCl_2$ (75 ppm) + dry storage + room temperature
T12- $CoCl_2$ (75 ppm) + wet storage + cold temperature

T13- $CoCl_2$ (75 ppm) + dry storage + cold temperature
T14- $CoCl_2$ (75 ppm) + Sucrose (4%) + wet storage + room temperature
T15- Silver nano + wet storage + room temperature
T16- Tap water + wet storage + room temperature

Spikes of tuberose (var. Prajwal) were harvested from field. Fresh weight of the spikes was measured. They were treated with chemical preservatives (Sucrose (4%) – 100 ml, Silver nano (140 ppm) – 300ml, Al_2 (SO_4) (800 ppm) – 300 ml, $CoCl_2$ (75 ppm) – 300 ml). After dipping in the chemicals, the spikes were kept for storage in room and cold chamber (8°C). Different storage method is followed such as dry and wet storage. Dry weight of spikes, volume of chemical preservatives consumed and vase life of spikes were measured after 6 days

Results

Different storage method is followed such as dry and wet storage.

Treatment	Weight of the flower stalk (g)		Volume of solution	
	Before treatment	After treatment	Initial volume (ml)	Final volume (ml)
T1	23	18	100	-
T2	20	10	DS	-
T3	26	19	100	68
T4	17	18	DS	-
T5	28	32	300	40
T6	19	9	DS	-
T7	16	24	300	38
T8	15	7	DS	-
T9	21	27	400	-
T10	25	18	300	11
T11	17	9	DS	-
T12	18	19	300	41
T13	13	7	DS	-
T14	19	16	400	22
T15	11	11	300	41
T16	25	23	300	10

Where DS – Dry Storage

Spikes of tuberose treated with Al_2SO_4 at 800 ppm placed in cold temperature in wet storage recorded less consumption of the holding solution and increase in the weight of flower spike (number of flowers opened increased).
Under dry storage flower spike treated with 4% sucrose under cold temperature recorded increased flower spike weighed.

References

1. Halevy AH, Mayak S. Senescence and post-harvest physiology of cut flowers, part-II. Hort. Rev. 1981; 3:59-143.
2. Reddy TV. Mode of action of cobalt extending vase life of cut roses. Scientia Hort. 1988; 36:303-313.