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Effect of Music on Post-harvest shelf life of cut flowers of *Hibiscus rosa-sinensis* L.

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Abstract

In the present paper, the effect of music on vase life of cut flowers of *Hibiscus rosa-sinensis* L. was studied. Two sets were maintained i.e. a control set -without exposer of music and a treated set–with exposure of Indian classical music. It was observed that music treated flowers remained fresh for longer time and it was also reflected in the values of water uptake by the peduncle.

1. INTRODUCTION:

A property of living things is that they respond to stimuli. Plants are complex multicellular organisms considered as sensitive as Flowers are the nature's most wonderful creations in the world. In addition to serve as the reproductive organs of flowering plants, flowers have long been admired and used by humans, mainly to beautify their environment and even as a source of food. Besides cut flowers hold a very important and special position in the trade. This concept of cut flowers / modern flowers is of recent origin in India, with the changes in tastes and preferences in their use i.e. for interior decoration and bouquets as against traditional use for garlands, venis etc. With the entry of multinational corporate offices, five star culture in hotels, hospitals etc. the domestic demand for flowers for vase and bouquets purposes has increased.

But after cutting flowers from plant it starts wilting. Marousky (1971) and Rogers (1973) have done elaborate studies and reviewed work in the field of causes of wilting of cut flowers and how to prolong vase life. Cut flowers decline after harvest because of numerous factors. There are mainly 2 sets of factors responsible for the keeping quality of cut blooms. (1)Internal mechanism of the plant body & (2) External environment of the plant body. According to Dole and Wilkins (1999), one of the most important factors for the declination of cut flowers is lack of water uptake. To prolong the cut flower life one has to control the environmental factors. Various methods and chemicals have been practiced for improvement in increasing the vase life. Jani (2010) has reported that DW alone as the holding solution can also increase the vase-life of cut flowers.

Music is known to greatly influence the growth of plants. It is known that music causes drastic changes in plants metabolism. Plants enjoy music, and they respond to the different types of music and

its wave-length. Classical music has a gentle vibration, and it's easy on plants. It is relaxing and has no hard beat. They will practically dance to it. The foliage will point upwards as if it is looking up to the heavens (http://www.ehow.com/members/ds_sherry 25515.html). It was also reported that classical music increased percentage seed germination in Mung (Phaseolus aureus) (Gadani and Mehta, 2011). Creath and Schwartz (2004) have also reported similar results. There also have been other reports on the enhancement of physiological conditions of the plants as a result of exposure to sound and music. (Yi et al., 2003; Coglan, 1994).

Thus, by looking to the positive effects of music on plants, present preliminary study has been undertaken to check the effect of music on post-harvest shelf life of cut-flowers.

2. MATERIALS AND METHODS

The plant material used for the experiment here is moth beans. The scientific name of moth bean is *Vigna aconitifolia.* It is a small, drought-resistant, annual, trailing herb with small yellow flowers and deeply lobed leaves, grown for its tiny edible beans, which range in color from light brown to dark reddish brown.

2.1. METHODOLOGY:

Freshly harvested flowers of *Hibiscus rosa-sinensis* L. were used for the experimental work. The flowers were harvested on the day they opened. They were cut diagonally and immediately placed in the beaker containing water. They were then brought to the laboratory. Leaves, if any, were removed from the flowering twig. They were recut again diagonally and were immediately placed in a test-tubes having distilled water. According to Jani(2010) DW is good enough in order to maintain the vase life of cut flowers or for prolonging it. In each test-tube 100ml distilled water were taken. Prior to placing in test-tube the length of the twig was kept 7 cms in order to overcome the influence of flower stalk length on vase life (Sangama and Singh, 1999). Two sets were maintained, one as control and another as treated i.e. it was exposed to Indian Classical music peace. It was without lyrics. Every day the condition of flower in terms of petal color, petal turgidity and water uptake by peduncle was noted down. Vase life or longevity of a cut flower is determined on the basis of attributes like diameter and length of florets, opening of flowers, changes in fresh weight, diameter and length of stem or pedicel, senescence pattern, colour of petals, total longevity and foliage burning (De and Bhattacharjee, 2000).

3. RESULTS AND DISCUSSION:

The cut flowers of *Hibiscus rosa-sinensis L.* kept in DW under normal environment remained fresh for two days. Their petal color as well as turgidity was retained and the flower appeared to be fresh for two days. But, after two days petals started wilting which was also reflected by no water uptake from the test-tube. There was no uptake of DW by the peduncle accompanied by water loss probably from the petal stomata. According to Dole and Wilkins (1999), one of the most important factors for the declination of cut flowers is lack of water uptake. This was also associated with pigment degradation in the petals which ultimately resulted in petal senescence. Similar observation has been made regarding pigment tendency towards senescence in *Hibiscus mutabilis by* Kuijper(1931).

In the second set i.e. the treated set which was given the exposure of music (Indian classical music), flowers though placed in DW have shown better vase life i.e.3 days and on 4^{th} day degradation in the pigment was started. It was observed that there was good water uptake as compared to no water uptake in the control set which probably helped in delaying the process of petal senescence. The water uptake by the peduncle compensated for the transpiration loss of petals and helped them to remain turgid. Pigment degradation was also delayed in music treated cut flowers. There were no significant changes were observed in peduncle length.

TABLE-1:Control:

Observation	Day-1	Day-2	Day-3	Day-4
Color change	No change	No change	Dark blackish red	Blackish
Peducle length	7 cm	7 cm	7 cm	7 cm
Water uptake	00 ml	00 ml	00 ml	00 ml

TABLE-2: Music Exposed Cut-flowers:

Observation	Day-1	Day-2	Day-3	Day-4
Color change	No change	No change	Dark red	Blackish dark red
Peducle length	7 cm	7 cm	7 cm	7 cm
Water uptake	00 ml	06 ml	07 ml	09 ml

5. CONCLUSION :

It was observed that music exposure to the cut flowers of *Hibiscus rosa-sinensis L.* prolonged the vase life. This preliminary study shall have great application in floriculture industry, as according to a survey conducted by Sampath (1962), cut flowers weighing 10,500 tons and worth Rs. 9.26 crores are sold annually in 5 metropolitan cities of Calcutta, Delhi, Mumbai, Bangalore and Madras. This survey is back-dated and the volume of trade has increased many folds. Extensive study can be done in this direction and the positive effects of music on the post-harvest shelf life of cut flowers can be exploited on the commercial level.

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