

Miscellaneous Tests on Cut Flower Life of Carnations

by W.D. Holley and Brian Matthews ¹

Several tests on the handling of cut carnations were completed during the fall of 1961. Cut flower life was measured by placing the flowers in a constant temperature room at 70°F. This room is heated with an electric bulb and cooled by refrigeration so that the variation around 70° is no more than ± 1 degree. A constant air flow from the cooling unit produces uniform temperature throughout the chamber. Cut flower life is considered past when the petals lose turgor and curve inward. The life is recorded as one day before this stage is reached.

Use of Detergents in Hardening Water

Multifilm X77 is a strong non ionic detergent which has been useful in aiding uptake of dyes. Preliminary tests have indicated toxicity of this emulsifier at rather low levels. Fresh cut flowers of the variety Red Gayety were hardened for one hour at room temperature in water and in water containing several concentrations of X77. The flowers were then transferred to one container of water containing 100 ppm chlorine and the life of the flowers measured. The test was repeated with 12 flowers of the variety Coquette per sample.

¹/ Brian Matthews is a visiting Research Assistant from England.

Table 1. Effects of several concentrations of Multifilm X77 on the life of cut carnations.

Hardening solution	Mean life in days
<u>Test 1</u>	
Water	6.9
Water + 1 drop/qt.	7.1
Water + 2 drops/qt.	7.4
Water + 5 drops/qt.	6.5
<u>Test 2</u>	
Water	6.8
Water + 1 drop/qt.	6.8
Water + 2 drops/qt.	6.8
Water + 5 drops/qt.	7.0

Since water uptake did not limit the keeping life of the flowers in these tests, they may be considered as tests for toxicity only. Two drops of Multifilm X77 per quart should insure adequate uptake of water and may be beneficial under conditions where water uptake is limited. Toxicity levels are above 5 drops/qt.

Water Salinity

Two tests were made with well water which gave a direct RD-15 Solubridge reading of 74, or approximately 5 grains/gallon of hardness. Untreated water was compared with water run through a softener (sodium substituted for other ions), and water softened and deionized. The softening process did not change the conductance of this water. Softening and deionization reduced the conductance reading to zero. Petalife was added to the three waters at 1 table-spoon/qt. and 25 flowers were used per sample. The life of these flowers was measured in a closed room at temperatures from 70 to 75°F with good air movement.

Table 2. Effects of medium hard water on carnation cut flower life.

Test 1	Mean life in days
Hard water (5 gr/gal)	5.96
Softened water	4.91
Softened and deionized water	6.08
<u>Test 2</u>	
Hard water (5 gr/gal)	6.20
Softened water	5.10
Softened and deionized water	7.31

Softening the water by the sodium substitution process decreased the life of the cut flowers. Deionization following softening improved keeping life significantly. This water was only moderately hard and was not seriously deleterious to cut flowers when used without treatment.

Flowers of the variety Pink Sim were placed in very hard water with a RD-15 Solu-bridge reading of 340. These were compared to cut flowers in this same water put through a softener (230 specific conductance) and to flowers in this water which was softened and deionized (0 conductance). Petalife at 1 tablespoon/qt. was added to each water.

Table 3. Effects of very hard water on carnation cut flower life.

	Mean life in days
Hard water (SC of 340)	8.8
Softened water (SC of 230)	7.3
Water softened and deionized	8.9

The difference in keeping life between the flowers in very hard and in deionized

water was not significant. In only one test did deionized water increase cut flower life. Softened water again decreased keeping life of the cut carnations.

These tests indicate that hardness of water may not be a serious factor in carnation cut flower life. In one test softening and deionization increased life by 15 per cent. In the other two tests cut flower life was the same in hard or deionized water. Softening the water by sodium substitution of the naturally occurring ions reduced cut flower life significantly in both waters.

Salinity due to specific ions, such as sodium, might be injurious to cut flowers. Water containing high amounts of specific ions should be compared to distilled water in determining possible problems in this area.

Your editor,

W.D. Holley

COLORADO FLOWER GROWERS ASSOCIATION, INC.

OFFICE OF EDITOR

W. D. HOLLEY

Colorado State University

Fort Collins, Colorado

FIRST CLASS