

The Influence of Stock Plant Grade and Plant Density on the Production of Greenhouse Roses

BARRY DEPAUW¹

This report covers the first year in a study to investigate the influence of stock plant grade and planting density on the production of 'Town Crier' and 'Forever Yours' roses.

Plant density or spacing has been investigated by several people. Triple-X 'Town Crier' was found to produce a greater number of blooms per square foot at 1.4 plants/square foot as compared to 0.86 plants/square foot (1). European researchers have also found that the average stem length remains the same while yield increases with an increase in density (3, 4, 5). How much the yield increases is dependent upon variety (3).

Methods

'Town Crier' and 'Forever Yours' were selected for study. Each treatment consisted of equal size plots, with Single X at 2.0 plants/square foot, Double X at 1.5 plants/square foot, and Triple X stock at 1.0 plant/square foot. With a typical three-row planting, there were 35 plants/plot Triple X, 46 plants/plot Double X and 70 plants/plot Single X. The same dollar value per plot was expended.

Eighteen plots, three per stock grade in each of the two cultivars selected, were randomized in soil and

gravel benches. Flowers were cut daily and graded by three-inch stem increments. Planting was in June with production beginning late July, following one soft pinch. All roses were cut above the second five leaf, until the fifth peak, at which time they were undercut for control of height only.

Effect on Yield

Table 1 illustrates how the roses responded. For 'Town Crier,' the lesser quality stock plants, Single X and Double X, produced approximately 500 more salable flowers than did the Triple X plants. This was a significant difference and established that production was increased in the plots with higher density planting.

'Forever Yours' was less dramatic, having approximately 100 more salable flowers in the lesser quality stock plants. Referring to Table 1, there were no significant differences as to effects of grade and density on yield in 'Forever Yours.'

Effect of Stem Length

Stem length was reduced during the first peak crop but reached the expected winter-spring production length by the second peak crop. Figure 1 illustrates the mean stem length for the peak production periods of both cultivars.

¹Graduate student, supported by the Colorado Rose Committee.

Table 1. Total yield compared to stock plant grades, cumulative.

Variety	Thru Nov. 10	Thru Jan. 12	Thru Apr. 13
Town Crier 1X	1776	2236	3101
Town Crier 2X	1755	2261	3118
Town Crier 3X	1367	1788	2603
Forever Yours 1X	1781	2379	3526
Forever Yours 2X	1898	2447	3534
Forever Yours 3X	1800	2355	3437

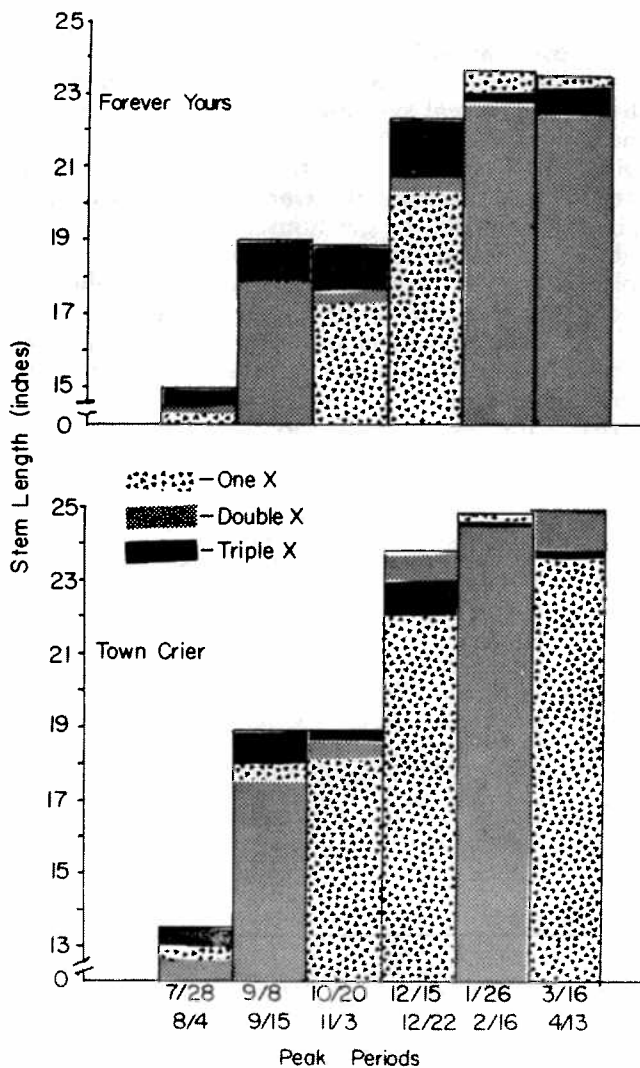


Fig. 1. Effect of planting density and stock plant grade on stem length of 'Forever Yours' and 'Town Crier' roses.

'Town Crier' flowers had longer stem length through the third peak when cut from Triple X plants (Figure 1). The fifth peak showed little difference among the three stock sizes, but the fourth and sixth peaks showed an increase in length from Double X stock.

'Forever Yours,' as illustrated in Figure 1, demonstrated an increase in stem length from Triple X plants through the fourth peak. However, at the fifth and sixth peaks the pattern changed with little difference between the Single X and the Triple X and approximately a one-inch reduction in the Double X plants.

Conclusion

Can a lesser quality stock plant be substituted at the time of replanting, planted at an increased density, and still produce the same quality crop? These results indicate that Single X and Double X stock plants can be substituted for Triple X plants in the first year of production. With an increased density of planting, these lesser quality stock plants, depending upon variety, will produce as high or higher yield than the Triple X plants at reduced density.

Results indicated that 'Town Crier' increased its yield with a slight reduction in stem length in the Single X and Double X stock versus Triple X stock. 'Forever Yours' demonstrated little difference in yield and stem length between Single X and Triple X plants.

References

1. Byrne, T. G. 1973. Greenhouse production of Town Crier roses grown at two plant spacings. *Calif. Florist* Feb., 1973, *Roses Inc. Bul. Apr.*, 1973.
2. Mihailov, N. L. 1958. The effect of spacing on the size and development of *Rosa canina L.*, *Bull. Glav. Bot. Sada.*, 30:38-41.
3. Rupprecht, H. 1963. Contributions on factors affecting the yield of roses under glass. *Dtsch Gartenb* 10:191-4, 247-50.
4. ———. 1972. The stand density of glasshouse roses. *Gartenbau*, 19(5):113-114.
5. *Tidsskrift Planteavl* (1974). The influence of plant density and root-stock on the yield and quality of three glasshouse rose cultivars. 78(1):53-66. Statens Vaeksthusforsuog, Denmark.