

CAPILLARY WATERING

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Poinsettias, pot mums, Rieger begonias and Easter lilies have been grown on capillary watering at UConn. Our first concerns were possible increased root rots caused by overwatering and mildew from the virtual sheet of water below the foliage. Neither occurred.

In each instance, a Vattex (1) pad was installed over a polyethylene sheet. Water was supplied by Viaflow (2) tubing from 8:00 a. m. to 4:30 p. m. or Chapin (3) Add-a-Headers activated at mist propagation frequency by a Solatrol (4). Although the Solatrol provided a more uniform water supply, no growth response differences were observed.

Table 1 shows the root disease ratings to be lower than similar pots grown on a portion of the bench without a pad and watered from the top. Those grown in clay pots on capillary watering without growth regulators had the best root systems. Those grown in plastic pots actually had better roots than indicated by the ratings since a couple of poor pots decreased the ratings disproportionately.

Figure 1 shows the height of the lilies. They were about the same height as those grown with conventional watering. The height reduction due to Ancymidol and Phosfon-L was slightly greater than

(1) Supplied by courtesy of U.S. Vattex Corp., Center Moriches, N.Y.

(2) Supplied by courtesy of E. I. duPont de Nemours & Co., Wilmington, Del.

(3) Supplied by courtesy of Chapin Watermatics, Inc., Watertown, N.Y.

(4) Supplied by courtesy of General Scientific Co., Hamden, Conn.

Table 1. Disease rating of 'Ace' Easter lilies grown with capillary or hose watering and A-Rest (0.5 mg) or Phosfon-L (8 oz 1:96/6" pot)

<u>Treatment</u>	<u>Water System</u>	<u>Root Rating*</u>
Clay pots	Capillary	7.2
Clay, A-Rest	Capillary	6.1
Clay, Phosfon L	Capillary	5.4
Plastic pots	Capillary	5.4
Clay pots, short	Hose	3.9
Clay pots, tall	Hose	3.4

*1 = severe root rot, 9 = healthy; LSD, 5% = 0.6

expected. It might be speculated that, without leaching, the treatment rates could be reduced somewhat.

Rather than prompting an increase in root diseases, root activity appeared to be enhanced. A poinsettia that was knocked out of the pot for frequent root inspection formed so many roots that the soil ball was raised out of the pot in a fashion similar to some bulbous crops during spring forcing. Rieger begonias had a more vigorous root system. Easter lilies had a lower incidence of root disease.

This poses an interesting question regarding ecological balances among the soil microflora and microfauna. The ability of root rot pathogens to cause disease has been studied extensively and intensively. But, most studies have presupposed overhead water applications which flooded the soil. Air was driven from small and large pores alike. Capillary watering must be different.

Ecological supremacy among soil denizens is held in a frail balance. There are millions of organisms in a teaspoon of soil media. They generally live in a

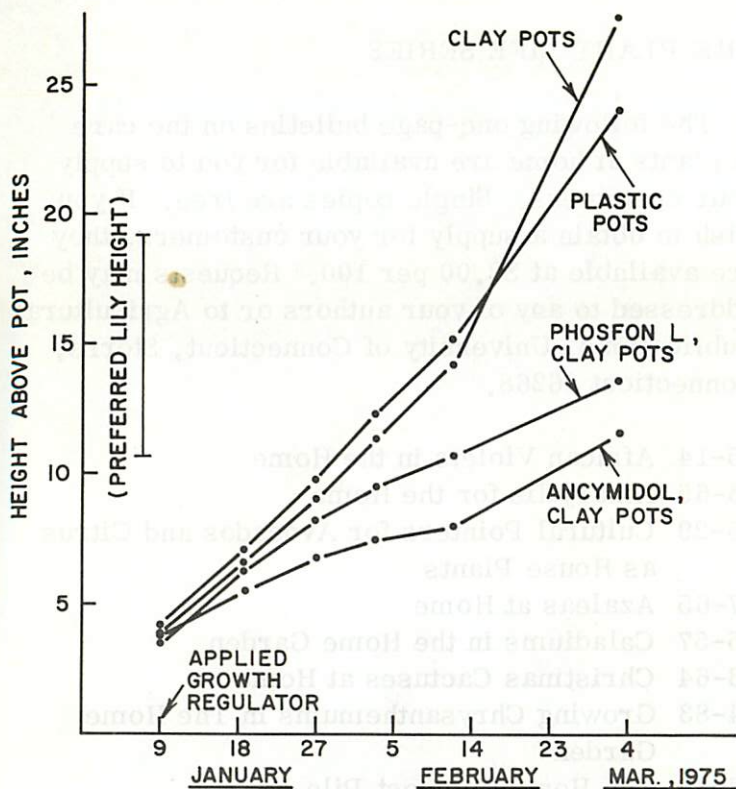


Figure 1. Height of lilies grown on capillary watering.

thin layer of water that coats everything in the soil. This layer is so thin (0.1 micron at 60% of field capacity or 0.5 atm) that bacteria (1 or 2 microns in diameter) are in effect immobilized.

Someday we will know more about ecological balances and plant disease on plants grown on capillary watering systems. For now, we are simply pleasantly surprised to find a lack of anticipated problems.

Poinsettias and Rieger begonias were supplied through the courtesy of Mikkelsen's, Inc., Ashtabula, Ohio; Easter lilies by G. Nutile, Inc., North Haven, Conn.; chrysanthemums by Stafford Conservatories, Inc., Stafford Springs, Conn.

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