Appendix 3

Experimental Plots with Mature Plant Species

Experimental container plots, consisting of mature plant species of *Dianthus* x *allwoodii* cv. Candy Stripe*, Hedera helix, Liriope muscari* cv. Variegata*, Vinca minor* cv. Bowles Variety*,* and *Hemerocallis* sp. cv. Rosie Meyer, were placed in a split block design, which was necessary due to watering constraints, at the nursery during the spring and summer of 2000 to 2001. Six blocks were split between two irrigation regimes--irrigation with chlorinated and non-chlorinated water. Twenty replicates/species were placed in each of the 6 blocks. Before plants were placed in the blocks, the presence of *Pythium* and *Phytophthora* spp. was ruled out by arbitrarily selecting 6 plants of each species for roots assays on P_{10}ARP+B and P_{10}ARP+B+H (Appendix 1, A1.1).

During dormancy in the winter months from 2000 to 2001 plants were overwintered under cover. During the growing season plants were monitored for root disease development throughout the season and if observed root isolation was performed. At the conclusion of the growing season, random plants were chosen for root plating on P_{10}ARP+B and P_{10}ARP+B+H, both modified with 10 mg per liter benomyl.

At the termination of the growing season in September 2000, visual examination of roots of plant species in plots revealed no root disease. However, 30 randomly selected plants each of *H. helix* and *Dianthus* x *allwoodii* were removed for root assays. No *Phytophthora* isolates were recovered in root platings on P_{10}ARP+B or P_{10}ARP+B+H media. Thirty colonies were recovered from *Dianthus* roots from the chlorinated treatment on P_{10}ARP+B and a single colony was recovered on P_{10}ARP+B+H. Twenty-seven colonies were recovered from *Dianthus* x *allwoodii*

roots from the non-chlorinated treatment on P_{10}ARP+B and a single colony was recovered on P_{10}ARP+B+H of an unknown identity, since no identifying structures were produced from this colony. All other colonies produced abundant intercalary chlamydospores, but no sporangia or sexual structures, and were presumed to be a single species. Root assays were conducted similarly for *H. helix* with three colonies of a *Pythium* sp. recovered each from chlorinated and non-chlorinated treatment and other colonies, which did not produce any structures and were not identified. Therefore, no differences between treatments were evident.

Some plant loss was experienced during overwintering, as outlined below (Table A7.1):

Table A3.1. Number of dead plants from each species after overwintering during 2000-2001.

	Chlorinated	Non-chlorinated
Dianthus	6	0
Hedera	9	23
Hemerocallis	0	0
Liriope	1	3
Vinca minor	16	43

No *Phytophthora* or *Pythium* isolates were recovered from roots of dead plants plated on P_{10}ARP+B and P_{10}ARP+B+H, except in the case of *Hedera* on P_{10}ARP+B where a *Pythium* sp., which produced filamentous sporangia, was isolated from all plants in both chlorinated and non-chlorinated treatments. Although more mortality was seen with non-chlorinated plants in some cases, these plants were apparently placed on the periphery of overwintering blocks, and therefore more subject to death by freezing.

The fall of 2001 was relatively mild and the two-year old plants were left in the block until November when roots were visually examined and root assays was performed on 10 randomly chosen plants of *L. muscari, Hemerocallis* sp.*,* and *D.* x *allwoodii* from each irrigation

treatment. The visual examination of roots was negative for root disease for plants in both chlorinated and non-chlorinated treatments. Since no root disease was evident and *Phytophthora* spp. had not been isolated in previous attempts, plant roots were plated on P_{10}ARP+B and acidified potato dextrose agar (APDA) [Appendix 1, A1.6]. Prior to plating on APDA roots were surface disinfested with 10% bleach solution for 1 min. Two different Oomycetes, which formed sexual structures, but no sporangia were recovered on P_{10}ARP+B from all plants assayed with no differences between the two irrigation treatments evident. The isolates were characterized by producing either 1) oogonia with paragynous antheridia, which formed abundantly or 2) ornamented oogonia with paragynous antheridia, which formed abundantly. All colonies recovered from *D.* x *allwoodii* and *Hemerocallis* sp. were identified as secondary organisms, such as *Trichoderma* spp. and *Rhizopus* spp., with no difference between irrigation regimes observed. *Fusarium oxysporum* was recovered from all *L. muscari* plants assayed.

It is probable that the plants used in this study were either 1) at a maturity that was not susceptible to root rotting organisms under the conditions of the trial or 2) species generally not susceptible to root rotting organisms.