First Season Growth of 'Kanzan' Cherry and 'Chanticleer' Pear in Above-Ground and Pot-in-Pot Production Systems

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In 1997 I began a research project at the Center for Applied Nursery Research to look at the growth of two ornamental tree species produced with a conventional above-ground (CAG) or pot-in-pot (PIP) production systems. Pot-in-pot production offers a number of advantages to growers such as protection of the root system from extreme temperature fluctuations and preventing containers from blowing over. One of the primary problems with PIP production is rooting-out and anchoring into the surrounding soil, thus making harvesting difficult. Two innovations to prevent rooting-out are being evaluated in this study. The first is a copper hydroxide coated piece of nonwoven polypropylene fabric known as a Tex-R Insert which is installed between the planted container and the holder pot. The second method uses a new pot design from Lerio known as a "moat pot". The moat pot has raised drainage holes in the bottom center of the pot which causes the bottom to retain water, thereby eliminating or reducing rooting-out via water root pruning.

The study was initiated on 2 June 1997 at the Center for Applied Nursery Research in Dearing, GA. Uniform liners of *Prunus x* 'Kanzan' (Kwanzan cherry) and *Pyrus calleryana* 'Chanticleer' ('Cleveland Select' pear) were planted into #15 containers in the spring of 1997. Potting substrate consisted of milled pine bark and sand (5:1 by vol) amended with following (in lb/yd^3): 12# High-N 22-4-7 + minors, 1# Micromax, 2# gypsum, 10# dolomitic limestone, and 2# Talstar insecticide. Holder pots were placed in the ground with 1 in. at the top of the pot remaining above grade.

The experiment was arranged as a randomized complete block with two species, three production treatments (CAG, PIP + Tex-R insert, and PIP + moat pot), and eight replications. Irrigation was applied as needed using low volume spray emitters. Initial plant height and stem diameter measurements were taken on 2 June 1997 with end of season measurements being taken on 16 October, 1997. Several containers from each treatment were evaluated for degree of root control in October.

For 'Kanzan' cherry, plant height in October was greatest for the PIP + Tex-R treatment (7.6 ft). The PIP + moat pot treatment (7.3 ft) was not different from the PIP + Tex-R or the CAG treatment (6.8 ft). Production system had no effect on stem diameter when measured in October (range 1.21 to 1.30 in). Production system had no influence on the height (range 7.5 to 7.8 ft) or stem diameter (range 1.29 to 1.32 in) of 'Chanticleer' pear.

None of the plants observed were rooted-out to the point where they could not be removed from the holder pot. As of October, the 'Chanticleer' pear had more roots outside of the planted container than did the 'Kanzan' cherry. No roots were observed to have grown through the Tex-R inserts for either species. The pear trees had more roots between the pots in the PIP + moat pot

treatment than did the cherries. For both species grown with the moat pots, the roots were thick and fleshy, similar to roots which have been grown in a hydroponic solution. No roots from either species were observed exiting the drainage holes of the moat pot.

Preliminary results suggest that the PIP production system may be more beneficial to the growth of 'Kanzan' cherries than for 'Chanticleer' pears. This is not unexpected since cherries are more sensitive to environmental extremes during production compared with callery pears. Both the Tex-R inserts and the moat pot have successfully controlled rooting-out to date. This study will be terminated during the summer of 1998 and should provide further insight toward the growth benefits of PIP production and the effectiveness of the two PIP systems for controlling the rooting-out problem.