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Growth of Containerized *Acer saccharinum* from Seed in a Cedar-amended Substrate

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Due to increasing scarcity and cost of pine bark, compounded in regions that lack indigenous pine species, alternative substrates for containerized nursery production are being sought. Utilization of eastern redcedar (*Juniperus virginiana* L.) as a substrate component could alleviate pine bark demand in these regions with a sustainable, local resource. Previous work has demonstrated that eastern redcedar may be an acceptable substrate component for some woody species. The purpose of this study was to evaluate the use of eastern redcedar as a potting substrate component for nursery crops propagated from seed. This study evaluated the growth of silver maple (*Acer saccharinum* L.) from seed in substrates composed of 0, 5, 10, 20, or 80% eastern redcedar chips that passed a 19 mm hammer-mill screen, 20% sand, with the remaining volume composed of pine bark, and two treatment rates of controlled release fertilizer (low= 4.5 kgAm⁻³, high= 8.9 kgAm⁻³). Plant height was not significantly affected by fertilizer rate during the study. At 48 days after planting, plant height averaged 23.1 cm except 80% cedar which averaged 12.0 cm. At 76 days after planting height varied among substrates, however plants grown in 80% cedar grew the least at 12.9 cm. Fertilizer had a significant effect on root and shoot dry weight as well as tree caliper with plants grown in the high fertilizer treatment having more growth than plants growing in low fertilizer treatment. Both fertilizer rates showed similar trends within the substrate treatments. Substrates containing 0% to 20% cedar produced plants similar in caliper, root dry weight, and shoot dry weight. Plants grown in 40% cedar substrates generally had less caliper, root dry weight, and shoot dry weight than plants grown in substrates containing 0% to 20% cedar, while plants grown in 80% cedar had significantly less growth than all other treatments. The lack of growth in 80% cedar substrates may result from physical properties (high air space, low container capacity) due to substrate processing through the 19 mm hammer-mill screen rather than an allelopathic or otherwise toxic quality of cedar. These results suggest that eastern redcedar could be a replacement for pine bark as a substrate in container-grown nursery operations with further development of substrate physical properties.

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