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Impacts of Aerated Compost Tea on Containerized *Acer saccharum* and *Quercus macrocarpa* Saplings and Soil Properties in Sand, Uncompacted Loam, and Compacted Loam Soils

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Abstract. **Aerated compost teas (ACTs) are applied to soils with the intent of improving microbial properties and nutrient availability and stimulating plant growth. Anecdotal accounts of ACT for these purposes far outnumber controlled, replicated, and peer-viewed experiments that have examined the impacts of ACT on soil properties and plant growth responses. This research assessed the impacts of four rates of ACT compared with water on containerized *Acer saccharum* and *Quercus macrocarpa* saplings growing in loam, compacted loam, and sandy soils. No significant differences were found comparing water with ACT applied at rates of 2, 4, and 40 kL ACT/ha for any of the six tree responses and 21 soil responses. Microbial biomass nitrogen (N) and potassium (K) increased, and available N decreased, in soils treated with ACT at 400 kL·ha^{-1} compared with water. Shoot, root, total biomass, and the root/shoot ratio were significantly greater for *Quercus macrocarpa* trees growing in compact loam with the 400 kL ACT/ha treatment compared with water, but significant differences were not detected for this application rate compared with water in the other soil types and in no instances with *Acer saccharum* saplings. These results provide some support for claims of ACT being able to increase soil microbial biomass and K, but provide minimal support for ACT being able to increase tree growth across multiple species in a variety of soil types. An application rate of 400 kL ACT/ha may be attainable for trees in containers with limited soil volumes, but this application rate is likely cost-prohibitive, and not practical, in the landscape. At this application rate, ≈1000 L of ACT would be required to treat a typical, and relatively small, critical root zone of 25 m^2.**