



Department of

Horticulture

WASHINGTON STATE UNIVERSITY

Department of Horticulture Seminar Series

HORT 509/510

Spring 2020

Thursdays, 2:50-3:40 pm

Presented at the following WSU campuses and Research and Extension Centers: Pullman, Tri-Cities, Mount. Vernon, Prosser, Puyallup, Wenatchee

Evaluating the characteristics of compost teas to improve the sustainability of crop production

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Abstract

Compost tea (CT) is increasingly studied and used agriculturally, but CTs themselves are often poorly characterized. There is insufficient supportive data regarding role of compost source, additives, aeration, and brewing time on qualities of resulting CTs and their effects on plants. This study was conducted to determine the biochemical characteristics of eight different CTs: a factorial of four recipes (A, B, C, and D) with two types of compost (WSU bedding compost [Wb] and vermicompost [Ver]). Each recipe was a distinct combination of additives and aeration cycle. Various controls were also created with only compost without additives, or only additives without compost. CTs and controls were brewed 10 d and analyzed at d 1, 3, 6, and 10. Additive recipes generally had more effect on chemical and microbial characteristics than did the compost type. Recipes A and B with either compost or no compost developed the highest microbial population and higher nutrient concentrations compared to the recipes C, D, and no-additive controls. Brewing time affected the microbial population and chemical properties of CTs. At d 1 CT's had high populations of bacteria but by d 3 higher populations of protozoa and fungi were observed. CT recipes A & D made with Ver or no compost (Con) at 3 or 10 d was compared Hoagland solution as a fertilizer of baby beets. Leaf number, chlorophyll content, taproot diameter, and plant growth were greatest with AVer 10 d, AVer 3 d, and ACon 10 d, even compared to 100% or 150% Hoagland. Using AVer at 50% plus Hoagland 50%, or simply non-brewed ACon, similarly enhanced leaf number, chlorophyll, taproot diameter, green weight, dry weight of beets compared to Hoagland. We conclude that the greatest influence comes from additives of CT, and growth effects on plants can exceed that explained by nutrient supply.