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Hog Compost as a Substrate Amendment: Preliminary Report

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INTRODUCTION

Composts made of manure, bedding and animals are available in abundance in Kentucky. Mechanical composting directly captured from a hog production facility floor mixed with woodchips and automatically turned in windrows under cover (Figure 1) will create a low moisture, low readily degradable organic matter. Suggesting the finished compost would have lower transportation costs and should provide value as a soil conditioner (Cook, et al., 2015). A west Kentucky hog producer has tried to market compost in retail consumer packaging. The hog compost has been certified for organic growing. He has found that a quality compost cannot compete with prices for less consistent composts in the marketplace. He has determined bulk use for soil conditioning and as a substrate amendment have potential as market outlets (O'Bryan, 2018). Hog compost will be tested for use as a substrate amendment in container production of ornamental plants.

MATERIAL AND METHODS

Substrates of 100% pine bark and 85% pine bark and 15% hog compost by volume were mixed for 15 minutes in a Cube Cart-Away mobile cement mixer (Figure 2) on 12 July 2018. Samples of each substrate were sent to the University of Kentucky soils laboratory for analysis.

Figure 1. Automated composting windrows.

'Smaragd' arbovitae (*Thuja occidentalis*) were planted in 7-gal containers at 30 containers for each substrate with 15 randomly selected for pour-through sampling.

Pour-through (Dunwell, 2013) sampling was done September 5, 2018 following eight weeks of cyclic timed irrigation of 10 minutes each from Agridor 4463-20 spray emitters in each container at 1:00 pm. and 4:00 pm.

Figure 2. Cube Cart-Away mixer

RESULTS AND DISCUSSION

The arborvitae plants were allowed to grow without additional fertilizer for 8 weeks. Dramatic color differences were observed. The plants in the 100% pine bark were chlorotic while the plants in the 85% pine bark:15% compost were green (Figure 3).

Figure 3. Substrate foliage color comparison.

Pour-through results for electrical conductivity (µS/cm) (Figure 4) and pH (Figure 5) were significantly higher for the compost amended substrate as would have been expected from the substrate test from samples at mixing (Table 1). Pine bark samples with just 1 ppm Nitrate-N versus 139 ppm nitrate-N for the pine bark/compost indicates fertilization of straight pine bark substrates at planting is necessary.

Table 1. Substrate test at mixing.

		Conductivity	nitrogen-N	Nutrient concentration (ppm)									
Media	pH	µS/cm	ppm	P	K	Ca	Mg	B	Na	Cu	Fe	Mn	Zn
PB[1]	4.8	440	1	8.9	55.4	29.8	8.1	0.1	10.4	0.2	14.2	5	2.9
PB/ Compost	5.8	4,240	139	287.1	714.3	165.8	93.4	0.4	227.5	3.4	44.5	20.2	49.6

[1]PB=pine bark

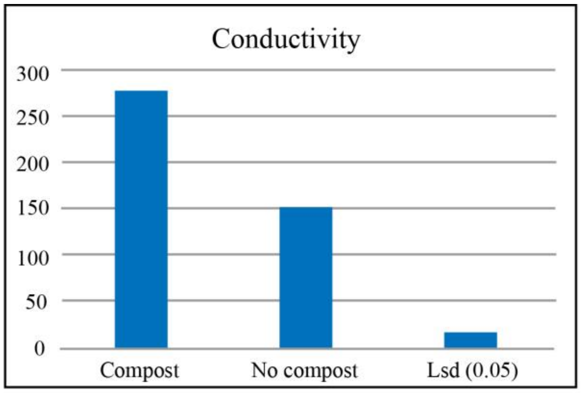

Figure 4. Substrate conductivity comparison.

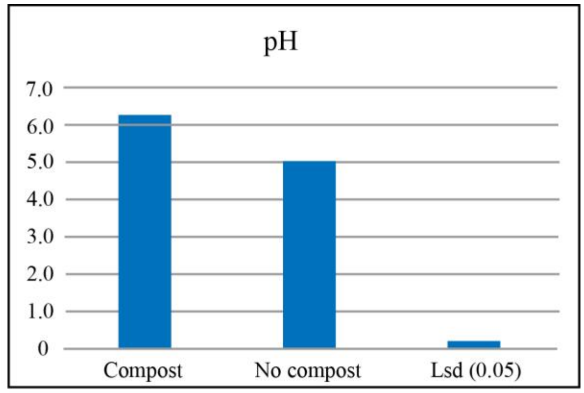

Figure 5. Substrate pH comparison.

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