

# Evaluation of Pulverized Fuel Ash Mixed with Organic Matter to Act as a Manufactured Growth Medium

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Combinations of PFA (Pulverized fuel ash) mixed with composted municipal organic waste were compared to a local soil and a commercial potting soil "Promix" in an attempt to assess the potential performance of the manufactured growth medium. Results from growth trials were related to the Physico-chemical characteristics of the mixtures and fruits were analyzed to determine potential metal uptake

Dried fruit weights from tomatoes grown in mixtures of compost with 5, 10 and 20% PFA were significantly higher than the soil and soil with the recommended dose fertilizer. Fruit production for the 5% PFA mixture was 2.5x that from the soil and 25% higher than the soil + NPK. Fruit production in the 10 and 20% additions were >2x that in the soil. In all cases fruit production in the mixture was 30% higher than the trials with Promix. Analyses of variance indicates that the mixtures of PFA and compost are all significantly different from the control soil and rank the performance of treatments as follows PFA10:CP90> PFA5:CO95> PFA20:CP80.

In all cases element concentrations reported in tomato fruit analyzed did not exceed the maximum reported concentration range normal for plants. Furthermore, with the exception of B and Fe, element concentration means for mixtures were not significantly different from the soil or PROMIX.

Results from the trials indicate that a suitable potting medium can be created from PFA mixed with composted organic material. The physical and chemical composition of mixture promotes healthy and long-term growth without the need for fertilizers.