Influence of coal ash application on tomato growth, soil and water quality. (S11-li131213-Poster)

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Abstract:

The objective of this study was to evaluate effects of coal ash/biosolids/yard waste compost on soil physical and chemical properties, soil water quality and yields of tomato (Lycopersicon esculentum Mill) grown on calcareous gravelly soils in south Florida. Application of fly ash/yard waste compost (50 and 75 mt/ha) significantly increased total marketable tomato yield by 14 to 71%. Application of 75 mt/ha fly ash compost reduced fluctuation of surface soil temperature. Fly ash compost significantly increased AB-DTPA extractable Fe, Ni and Mo in treated soils and concentrations of Mn and Mo in tomato leaves. Only concentrations of Fe and Mo in tomato fruits from plots treated with this coal ash mixture were greater than those from control plots. Application of 75 mt/ha fly ash compost significantly increased total amounts of Zn, Pb and Mo collected in lysimeter water during 12 months following application. Concentrations of trace metals analyzed in this study were very low. The maximum concentrations of Mn, Pb and Cd in lysimeter water samples from both treated and control plots were only occasionally greater than MCL (Manxmen Contaminant Level for drinking water). Therefore, appropriate application of coal ash mixture should not lead to any significant detriment to soil, food, and groundwater.

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