

Recycled Waste Increased Tomato Production Under Field Conditions

Lusekelo Nkuwi, Eric Turley, and George Antonious

College of Agriculture, Food Science, and Sustainable Systems, Division of Environmental Studies, Kentucky State University, Frankfort, KY 40601, USA

Abstract

As more municipal sewage sludge (SS) treatment districts turn to composting as a means of sludge stabilization and because of the rapid growth in the poultry industry, significant chicken manure (CM) and municipal SS generation will become available in increasing quantities. A field trial area was established at the University of Kentucky South Farm. Tomato (*Lycopersicon esculentum* var. Mountain spring) seedlings of 52 days old was planted in 30' × 144' beds of freshly tilled soil at eight inch row spacing on June, 2016. The entire study area contained 30 plots (3 replicates × 10 treatments). Each bed was divided into three replicates in a randomized complete block design (RCBD) with the following 10 treatments: 1) control (no-mulch untreated soil); 2) sewage sludge; 3) horse manure; and 4) chicken manure; and 5) yard waste compost. Each of the 5 treatments was also mixed with 1% biochar to make a total of 10 treatments. Results revealed that yields obtained from CM and CM mixed with biochar were highest whereas, yield obtained from yard waste compost was lowest compared to other soil treatments. Accordingly, recycling CM waste for use as a low-cost fertilizer resulted in a positive effect on the growth and yield of tomato.