

SUSTAINABLE VEGETABLE CROP PRODUCTION USING VERMI-COMPOST

Marc Zucco, S.-K. Chong, C.K. Hsu, Alan Walters, Terry Wyciskalla,
Brian Klubek and Andilee Warner,
Department of Plant, Soil, and Agricultural Systems
Southern Illinois University, Carbondale, Illinois, USA

Abstract

This research intends to utilize earthworm castings as an alternate nutrient source, especially nitrogen, for vegetable crop production. The experiment was conducted in the greenhouse and 'Mountain Fresh' tomato (*Lycopersicon esculentum* Mill.) was used as the test crop. The main objectives were (1) to identify the optimum application rate of earthworm castings (EC) for tomato growth, and (2) to compare tomato response under different treatments. Three different textural soils, namely sandy soil, silt loam and clayey soil were included in the evaluation. The experiment was conducted under a randomized complete block design with seven treatments, and four replications per treatment. The treatments were soil mix with (1) 0 g g⁻¹ earthworm castings application (EC) + no fertilizer (control); (2) 0 g g⁻¹ EC with 35 kg/ha of 12-12-12 complete fertilizer; (3) 0.05 g g⁻¹ EC; (4) 0.10 g g⁻¹ EC; (5) 0.20 g g⁻¹ EC; (6) 0.40 g g⁻¹ EC; and (7) 0.80 g g⁻¹ EC. Preliminary results from the green house study indicated that (1) earthworm castings enhanced tomato growth particularly for the sandy and clayey soil, (2) soil with higher rates of castings produced a taller plant, higher leaf number and higher chlorophyll reading, (3) adding a high rate of castings in soil might slow drainage and created an anaerobic condition, and (4) the best castings mixing rate was between 0.35 to 0.45 g g⁻¹.

PROCEEDINGS OF THE
THIRTY-SEVENTH
NORTH CENTRAL
EXTENSION-INDUSTRY
SOIL FERTILITY CONFERENCE

Volume 23

November 14-15, 2007
Holiday Inn Airport
Des Moines, IA

Program Chair:

Greg Schwab
University of Kentucky
Lexington, KY
(859) 257-9780
gjschw2@uky.edu

Published by:

International Plant Nutrition Institute
772 – 22nd Avenue South
Brookings, SD 57006
(605) 692-6280
Web page: www.IPNI.net