Tropentag, October 9-11, 2007, Witzenhausen

"Utilisation of diversity in land use systems:
Sustainable and organic approaches to meet human needs"

The Effects of Mycorrhizal Inoculation and Composted Brewery Waste on Growth of Potted Tomato (*Lycopersicon esculentum* Mill) Plant

Mojeed Liasu

Ladoke Akintola University of Technology, Department of Pure and Applied Biology, Nigeria

Abstract

The effects of mycorrhizal inoculation and composted brewery waste on growth of potted tomato [*Lycopersicon esculentum*] plant were investigated in an experiment in which composted (6, and 12 weeks composting) spent sorghum grains were used to supplement garden soil with the unsupplemented soil as control. Both were used as media for the establishment and growth of transplanted tomato seedlings. They were either inoculated or not inoculated with the arbuscular mycorrhizal fungus *Glomus mosseae*. Tomato stem height and width, and the numbers of nodes and leaves per plant were measured at weekly intervals. Transplanted seedlings did not survive in soils amended with brewery waste that had composted for six weeks and only those that were inoculated with *G. mosseae* showed slight (twenty percent) survival. Tomato seedlings grown in the supplemented soils (both inoculated and uninoculated) showed hundred percent survival like those in unsupplemented soils when the brewery wastes were allowed to compost for twelve weeks. Arbuscular mycorrhizal inoculation similarly promoted weekly increases in stem height and stem width of tomato seedlings particularly in soils supplemented with brewery waste after twelve weeks of composting. Number of leaves per plant was more markedly enhanced by AM inoculation in tomatoes grown on unsupplemented soils. Concentrations of Zn, Fe, Pb and Cd in both soil and brewery waste samples were below the Federal Environmental Protection Agency (FEPA) safe levels. *Micrococcus acidophilus* and *Streptococcus faecium* were bacterial isolates from the brewery waste supplement. Inoculation with *Glomus mosseae* promoted the growth of tomato in soils supplemented with composted spent sorghum grains. Brewery waste i.e. spent sorghum grains can be used as organic soil supplement for cultivating tomato only after an appreciable period of composting, and the negative effect of a shorter period of composting could probably be mitigated by AM inoculation.

Keywords: AM inoculation, composting, *Glomus mosseae*, soil supplementation

Contact Address: Mojeed Liasu, Ladoke Akintola University of Technology, Department of Pure and Applied Biology, 23401 Ogbomoso, Nigeria, e-mail: laideliasu@yahoo.com