



Tropentag, October 11-13, 2006, Bonn

“Prosperity and Poverty in a Globalised World—
Challenges for Agricultural Research”

Effects of Mycorrhizal Inoculation and Inorganic Nutrients on the Efficiency of Biomass Transfer to Okra by *Tithonia diversifolia* Hedges.

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Abstract

The effect of introduced arbuscular mycorrhizal (A.M) fungus i.e. *Glomus mosesae* on phytoextraction of soil nutrients by *Tithonia diversifolia* hedges and efficiency of biomass transfer to potted okra plant were investigated. The first experiment (Field) was a two way factorial design and the two factors were fertiliser application and mycorrhizal inoculation combined to give four treatments i.e. fertilised and inoculated (F+ M +), unfertilised and inoculated, (F- M+) fertilised and uninoculated (F+ M -) and unfertilised and uninoculated (F-M -). Harvesting was done in two consecutive trials each lasting for three months. Harvested leaf biomass from each treatment was applied as mulch to potted okra plants in a second experiment with un-supplemented soil as control and fertiliser supplemented soil as reference. The highest leaf biomass and nutrient yield were at first from *Tithonia* hedges grown in unfertilised inoculated and later from fertilised inoculated soils while the lowest yield in both cases were from unfertilised uninoculated soils. Soils supplemented with mulch from *Tithonia* supported the growth of okra plants better than those supplemented with fertiliser only while those grown in unsupplemented soils had the poorest growth and fruit yield. Fruits produced by okra grown in mulch supplemented soils were generally more acceptable to the taste panel than those grown in unsupplemented soils. The least accepted were those grown in fertiliser supplemented soils. Thus, nutrient extraction from fertilised and unfertilised soils by *Tithonia* hedges was enhanced by arbuscular mycorrhizal inoculation. Soil supplementation with mulch from *Tithonia* was more efficient than directly applied fertiliser in promoting growth and development of potted okra and table quality of the resulting fruit.

Keywords: Biomass transfer, *Glomus mosseae*, inorganic fertiliser, Okra, soil supplementation,