

DYNAMICS OF CARBON, NITROGEN, PHOSPHORUS AND POTASSIUM UNDER DIFFERENT *Tithonia diversifolia* MANAGEMENT SYSTEMS IN A TROPICAL AL- FISOL: A GREENHOUSE BIOASSAY

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ABSTRACT

The research investigated the dynamics of C, N, P and K under different *Tithonia* management options. Changes in soil N and P showed significant increase in these nutrients in treatment with incorporated *Tithonia* + NPK and Mulched *Tithonia* + NPK respectively. There was a reduction in the soil K at 6 WAP in all the treatments except those with NPK and mulched *Tithonia*. Generally, there was a sustained increase in soil organic carbon in all the treatments. There was an increase in N and P contents of maize plant with successive cycles thus indicating residual effect, most pronounced in treatment with incorporated *Tithonia* + NPK. However, there is the need for K supplementation at the second maize cycle. Maize biomass yield indicated the possibility of two cycles with mulched or incorporated *Tithonia* + NPK fertilizers as most promising option. Economic feasibility should, however, be considered.

Keywords: *Tithonia diversifolia*; nutrient dynamics