

EFFECT OF SELECTED ARBUSCULAR MYCORRHIZA FUNGI ON THE GROWTH OF *CALLIANDRA CALOTHYRSUS* AND *SORGHUM BICOLOR* IN SEMI ARID SOROTI

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INTRODUCTION Arbuscular mycorrhiza (AMF) are highly evolved non-specific symbionts with plant roots enhancing the latter's performance (Clark *et al.*, 1999). Mycorrhizal associations is thus, one plausible intervention geared towards successful restoration of fragile ecosystems as adaptation strategy. Therefore, the objective of this study was to identify the best mycorrhiza inoculant application for optimum tree/plant growth especially in areas without or with insufficient amounts of the micro-symbiont.

MATERIALS AND METHODS:

The study was conducted in Soroti, Eastern Uganda a semi-arid agro-ecological zone, (Figure 1) where the major land use cover is grassland with scattered trees, and small scale agricultural land. Dominant AM spore genera were identified, isolated, multiplied for inoculant production, and introduced onto potted *Calliandra* seeds at rates of 30 and 50 spores Land a control (no spore inoculation), (Plate 1). The best performing combination (the mixture-biomass) was used in the *Sorghum* on-farm experiment in Soroti.

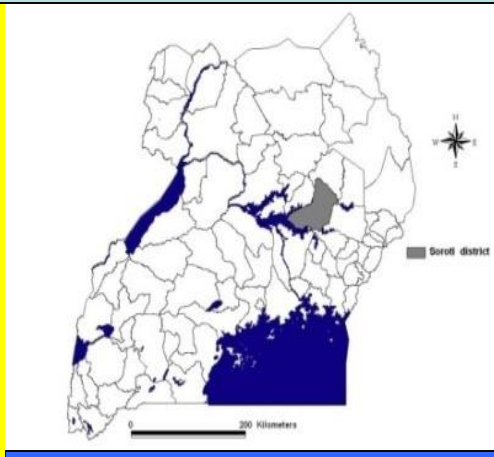


Figure 1: Location map of Soroti district



Plate 1: *Calliandra* in potted greenhouse experiment

RESULTS

- Relative rate of growth of the *Calliandra* seedlings decreased between week 1 and week 3 after germination (WAG) except for the spore genera mixture that slowly but steadily increased, (Figure 2).
- Single AMF isolates (*Glomus*) performed better for height and the mixture performed best in terms of biomass for the *Calliandra* potted experiment
- Maximum growth (height and biomass) was stimulated by mixed species of AMF as compared with the control for *Sorghum* on farm (Plate 2)

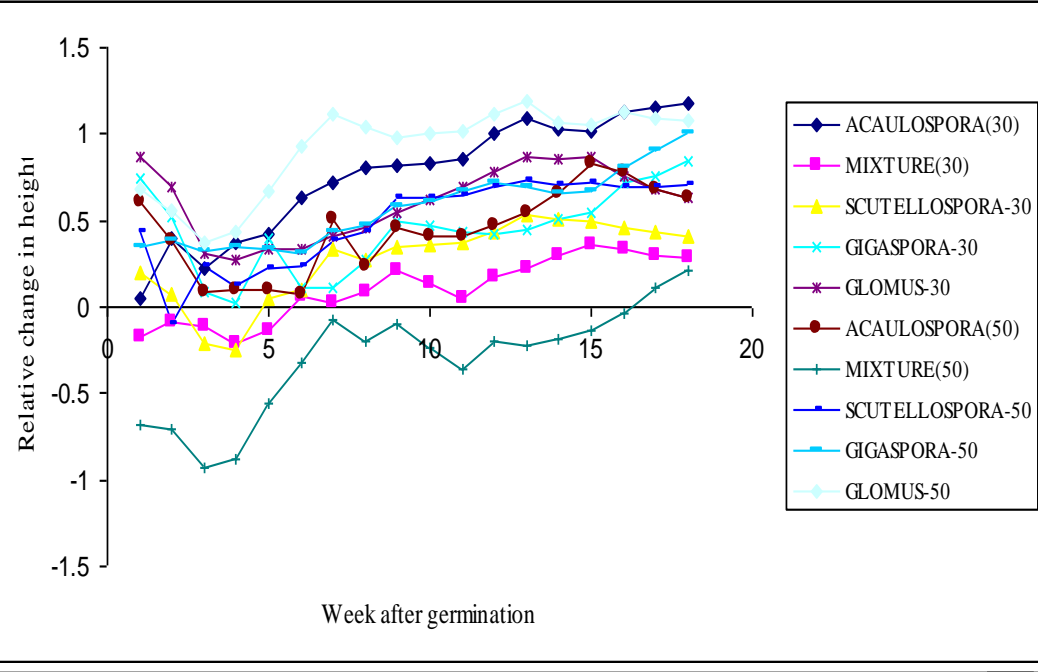


Figure 2: Relative change in height of *Calliandra calothyrsus*

Plate 2: (a) Mycorrhized *Sorghum* and (b) the control in Soroti

RECOMMENDATIONS

- AMF inoculation induced a positive response to sorghum growth on-farm whereas in the *Calliandra* potted experiment better performance was observed with single isolates and 50 spore rate.
- Characterization of AMF inoculant according to the different land use and agro-ecological zones is vital in Uganda
- Large scale manufacture of the inoculum is needed to boost agricultural production and forest regeneration

SELECTED REFERENCE Clark, R.B., Zeto, S.K. and Zobel, R.W (1999). Arbuscular mycorrhizal fungal isolate effectiveness on growth and root colonization of *Panicum virgatum* in acid soil.

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