Rehabilitation of Salty Lands Using Selected Salt-tolerant *Casuarina* - Microorganism Combinations

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Abstract

Recently, global warming has accelerated yield losses in ecosystems, even though there is an increased demand for food and wood due to rapid population growth in developing countries. According to the FAO statistics, 239 million people in sub-saharan Africa face chronic hunger. Abiotic stresses like salt and drought are among the observed effects of global warming and adversely affect ecosystem biodiversity and productivity. Planting salt tolerant nitrogen-fixing trees like members of *Casuarinaeae* could alleviate this problem by increasing soil fertility, enhancing productivity and improving smallholder farmers' livelihoods and food security. These trees are naturally salt tolerant and are also able to interact with arbuscular mycorrhizal fungi (AMF) that mitigate the adverse effect of salinity.

The aim of this work was to select the best combination of Casuarina and AMF to rehabilitate salinized lands. The impact of three AMF : *Rhizophagus irregularis*, *Glomus aggregatum* and G. *fasciculatum* was tested on the growth of two species of Casuarina -*C. equisetifolia* and *C. glauca*- in saline medium under greenhouse conditions. Results

showed that inoculation with *G. aggregatum* and *G. fasciculatum* increased *C. equisetifolia* and *C. glauca* growth in ten months after inoculation (préciser quelle concentration Na Cl). However, at 150 mM NaCl a better growth was obtained with *C. glauca* plants inoculated with *G. fasciculatum*. This study showed the importance to select the right AMF to increase plant performance in degraded lands and allow to select *C. glauca* - *G. fasciculatum* as a highly salt tolerant combination to be used for the rehabilitation of lands affected by salt.