



Research note

Screenhouse performance of VAM-inoculated seedlings of *Leucaena leucocephala* (Lam.) De wit. in a phosphorus-deficient and aluminum sulfate-treated medium

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Application. The noted advantages of mycorrhizal inoculation of seedlings of *Leucaena leucocephala* (Lam.) De Wit. were the development of more and longer roots, enhancement of phosphorus uptake, and production of vigorous and healthy transplants, all of which have the potential to enhance field survival and growth of the plant when used in reforestation and other land reclamation attempts.

Abstract. The effect of 3 species of vesicular-arbuscular mycorrhizal (VAM) fungi on the growth of *Leucaena leucocephala* (Lam.) De Wit. in a phosphorus-deficient and aluminum-sulfate (AIS)-treated medium was investigated in a screenhouse experiment. Plant height, root length, nodulation, phosphorus uptake and nitrogen fixation were used as indices of plant performance.

While there were significant differences among mycorrhizal plants with respect to these indices, they outperformed their non-mycorrhizal counterparts in all respects except in nitrogen content. Of the 3 mycorrhizal species studied, *Glomus etunicatum* (Becker and Gerd) was the most efficient, followed by *Glomus fasciculatum* (Thaxter) Gerd and Trappe, and finally, *Gigaspora margarita* (Becker and Hall). Both aluminumsulfate and mycorrhizal treatments increased shoot dry weight.

Introduction

Two of the major constraints to the successful establishment and growth of *Leucaena leucocephala* (Lam.) De Wit., a tropical and subtropical tree species that has a variety of uses, are topographical limitations and high sensitivity to acidic and aluminum (Al)-saturated soils (Hutton 1980) commonly found in vast areas of tropical South America (Sanchez and Salinas 1981), Southeast Asia and Africa. In acidic soils, *Leucaena* plants lack vigor, are stunted, chlorotic and are poorly nodulated (Hutton 1980; Munns 1976). The growth-limiting and related effects of soil acidity have been attributed to the direct influence of pH *per se*, and indirectly to toxicities of Al or manganese (Mn) or both, and the deficiencies of calcium (Ca), molybdenum (Mo), magnesium (Mg) and phosphorus (P) (Adams 1981; Foy et al. 1978).