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Effect of rhizobial inoculation on growth of *Calliandra* tree species under nursery conditions

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Abstract A nursery experiment was conducted in un-sterilized soil in Senegal using six *Calliandra* species or provenances inoculated with a mixture of seven rhizobial strains. Plant growth was assessed periodically at 1, 2, 3, 12 and 18 months whereas nodulation, shoot and root dry weights were assessed at 12 and 18 months after planting (MAP). Un-inoculated seedlings of all the six species died at 12 months after planting. Results of growth assessments were variable with significant differences ($P < 0.05$) between *C. calothyrsus* Meissn provenances (Flores and San Ramón) and *C. juzepczukii* Standley in height at 1, 2 and 3 MAP. Shoot dry weights of San Ramón provenance of *C. calothyrsus* Meissn were also significantly different from those of *C. acapulcensis* (Britton and Rose) Standley and *C. longepedicellata* (Mc Vaugh) H. Hern and Macqueen at 18 MAP. In contrast, *C. glandiflora* (L'Her.) Benth grew poorly and did not nodulate. Although rhizobial inoculation improved shoot and root dry weights some differences were observed among the *Calliandra* species in response to the inoculation, which suggested the occurrence of interaction between the rhizobial strains and the host plant species tested.

Keywords *Calliandra* genus · Inoculation · Nitrogen-fixing symbiosis · Nodulation · Rhizobial

Introduction

Calliandra is one of the most widely used tree legumes in agroforestry systems in East and South Africa. *Calliandra* is a genus of mimosoid legumes containing approximately 130 species, some of which have a proven nitrogen fixing ability. Most of them occur in the

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