

Effect of the different substrates on root pruning of *Acacia auriculiformis* A. Cunn. ex Benth. and *Acacia mangium* Willd. seedling in the nursery.

Mankessi F^{1*}, Moulambi Nzonza JS², Matondo R¹, Bassiloua J-B^{1,3}, Makouanzi Ekomo C.G.^{1,2}, Loubota Panzou G. J.^{4,5}

¹ Ecole Nationale Supérieure d'Agronomie et de Foresterie (ENSAF), Université Marien-Ngonabi, BP 69, Brazzaville, Congo

² Institut Nationale de Recherche Forestière (IRF), Cité Scientifique de Brazzaville, Route de l'Anberge de Gascogne. BP 177 Brazzaville, République du Congo

³ Centre de Valorisation des Produits Forestiers Non Ligneux (CVPFNL), BP 5700, Pointe-Noire, République du Congo

⁴ Laboratoire de Botanique et Ecologie, Faculté des Sciences et Techniques (Université Marien NGOUABI), BP 69 Brazzaville, République du Congo

⁵ Geography, College of Life and Environmental Sciences, University of Exeter, Exeter EX4 4RJ, UK

*Corresponding author: Ecole Nationale Supérieure d'Agronomie ET de Foresterie (ENSAF), Université Marien Ngonabi, BP 69 Brazzaville, Congo. Email: *framankessi@yahoo.fr

Keywords: sexual multiplication, substrate, *Acacia auriculiformis*, *Acacia mangium*, intensive production, root pruning.

1 SUMMARY

The effects of different substrates and genotypes on root pruning were estimated in order to recommend a technical plan for the production of *Acacia spp.* in the nursery. Two randomized tests-- were conducted on *Acacia auriculiformis* A. Cunn. ex Benth and *Acacia mangium Willd.*, in six types of substrates made of humus soil, crushed coal and fine sawdust in different proportions. After sprouting, young seedlings aged three weeks were transplanted into in SAPPI trays, alveolar cells filled with substrates and observed closely until planting season. A low dose of NPK fertilizer (20 20 20) in granule formulation (30g diluted in 10l of water) was provided weekly to the plants. Seedlings heights and diameters were measured during months 1, 2 and 3 in the acclimation area. When the planting age was reached, roots dry matter mass (RDM) was estimated for both species with the aim to appreciate seedling roots pruning. Results indicate that, at the planting age, seedlings from substrates 6 (75% soil + 25% charcoal) and 4 (50% soil + 50% charcoal) had the best growth performances, followed by plants from substrates 1 (75% sawdust + 25% charcoal) and 5 (50% soil + 25% charcoal + 25% sawdust). Substrate 5, because it does not generate compaction, was selected for plants production. A variance analysis revealed a genotype effect on root pruning (0.31g vs 0.24g respectively for *Acacia auriculiformis* A. Cunn. ex Benth. and *Acacia mangium Willd.*). At the plantation age, this study results showed strong correlations between diameter and height ($r = 0.65$, $P < 0.001$), diameter and (RDM) ($r = 0.44$; $P < 0.001$) on the one hand, and between height and RDM ($r = 0.47$; $P < 0.001$) on the other hand.
