

## **Early Root Development of *Eucalyptus pellita* F. Muell. Seedlings from Seed and Stem Cutting Propagation Methods at Nursery Stage**

### **ABSTRACT**

Macropropagation using cutting for larger multiplying seedlings is cheaper and efficient instead of clonal seeds for uniform plant material seedling production. However, information on root growth of *Eucalyptus pellita* at early development from seed and stem cutting of *E. pellita* seedlings is still lacking. With such information, it is useful for forest plantation company management in enhancing the understanding of strategies to optimize yield production with the appropriate agronomic or silvicultural approach in the field of planting. Therefore, the objectives of this study were to compare the root development of two different types of propagation seedlings of *E. pellita* and to study the effect of various nitrogen concentration levels on two different types of propagation of *E. pellita* seedlings. The study was conducted using *E. pellita* seedlings from two different types of propagation, namely, seed and stem cuttings, along with three different nitrogen concentrations (0, 50, and 200 kg N ha<sup>-1</sup>). Shoot biomass, root intensity (RI), total root intensity (TRI), root biomass, root length density (RLD), and specific root length (SRL) were recorded. Dried shoot biomass, RLD, and SRL of *E. pellita* seedlings using stem cutting were significantly higher ( $P < 0.05$ ) compared to seed, whereas there were no significant differences ( $P > 0.05$ ) for root biomass, TRI, and RI between the propagation types of *E. pellita* seedlings. In conclusion, *E. pellita* seedlings from stem cutting were greater in terms of root distribution compared to propagation by seeds at the nursery stage, and 50 kg N ha<sup>-1</sup> was the optimal nitrogen concentration level from the considered levels to be applied to the *E. pellita* seedlings.