

Effects of Light Intensities on Seed Germination and Early Growth of *Chrysophyllum albidum* and *Irvingia gabonensis* Seedlings



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ABSTRACT

Tropical forests contain many socio-economically important tree species with edible parts, most of which are currently endangered. In this study, we investigated the effects of light intensities on the germination and early growth of *Chrysophyllum albidum* and *Irvingia gabonensis* (var. *wombulu*) as a necessary step towards their domestication. The seeds of both species were sown in three screen houses that allowed the penetration of 40%, 60% and 100% light intensities as well as under closed natural forest canopy and open sky. Early growth was monitored for 12 and 24 weeks for *C. albidum* and *I. gabonensis*, respectively. Light intensity significantly affected the germination of *C. albidum* seeds but did not affect *I. gabonensis* seeds. Early growth rate of the seedlings of both species was significantly affected by light intensity. By 12th and 24th weeks, seedlings' height and diameter ranged from 8.9–15.2 cm and 0.25–0.44 cm respectively, for *C. albidum* and from 37.3–76.3 cm and 0.65–0.79 cm respectively, for *I. gabonensis*. Both species performed poorly under forest canopy, indicating that they may not perform well under heavy shade. *C. albidum* seedlings under 100% light intensity and open sky died shortly after emergence, implying this species needs shading during early growth. Although *C. albidum* seedlings under 40 and 60% light intensities had statistically comparable growth parameters, the overall best growth and most stable seedlings were obtained under 40% light intensity. *Irvingia gabonensis* seedlings performed well under 40, 60 and 100% light intensities as well as under open sky. Since *I. gabonensis* seedlings had the best growth under open sky, it therefore implies that the species could survive if planted in open field, without shading.

Keywords: Domestication, food tree species, growth performance, regeneration, light intensity, slenderness ratio