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Domestication of Socio-economically Important Forest Food Tree Species: Effects of Light Intensities on Germination and Early Growth of *Chrysophyllum Albidum* and *Irvingia Gabonensis*

JONATHAN C. ONYEKWELU¹, BERND STIMM², REINHARD MOSANDL³, JOHNSON ADEYINKA OLUSOLA⁴

¹The Federal University of Technology, Dept. of Forestry and Wood Technology, Nigeria

²Technical University of Munich, Institute of Silviculture, Center of Life and Food Sciences Weihenstephan, Germany

³Technical University of Munich, Institute of Silviculture, Center of Life and Food Sciences Weihenstephan, Germany

⁴The Federal University of Technology, Dept. of Forestry and Wood Technology, Nigeria

Abstract

Tropical forests contain many socio-economically important tree species with edible parts, most of which are currently endangered. This study investigated the effects of light intensities on germination and early growth of *Chrysophyllum albidum* and *Irvingia gabonensis* (var. *wombulu*) as a necessary step towards their domestication. Seeds of both species were sown in three screen houses that allowed the penetration of 40%, 60% and 100% light intensities as well as controls (under forest canopy and open sky). Seed germination was monitored for 60 days after sowing for the two species while early growth was monitored for 12 and 24 weeks for *C. albidum* and *I. gabonensis*, respectively. Light intensity significantly affected *C. albidum* seed germination but not *I. gabonensis* seeds. Early growth rate 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 for *C. albidum* and 37.3–76.3 cm and 0.65–0.79 cm for *I. gabonensis*, depending on light intensity. Both species performed poorly under forest canopy, indicating that they may not do well under heavy shade. *C. albidum* seedlings under 100% light intensity and open sky died shortly after emergence, implying the seedlings need some shade for establishment and 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 moderate shade and high light environments. However, *I. gabonensis* seedlings under open sky had overall best growth results, thus they have the potential to survive when transplanted to the field.

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