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Seed Germination and Early Growth of *Chrysophyllum albidum* Seedlings under Different Light Intensities

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Abstract

The need for domestication of important and endangered forest food tree species has been pointed out. This study investigated the effects different light intensities on the germination of *Chrysophyllum albidum* seeds and early growth of its seedlings, which is a necessary step towards its domestication. Seeds were collected from *C. albidum* elite trees identified in previous study. The light intensities (LI) investigated were 100 %, 60 %, and 40 % while the controls were under forest canopy and open nursery condition. The growth characteristics investigated were total height, collar diameter, number of leaves and biomass accumulation. The experiment was conducted at the nursery of the Department of Forestry and Wood Technology, Federal University of Technology Akure, Nigeria and monitored for 18 weeks. Results showed a significant effect of light intensity on seed germination and seedlings early growth. Cumulative germination ranged from 19.0 % to 58.7 % and was highest under forest canopy and lowest under 100 % light intensity. Seedlings under high light environment (100 % light intensity and open nursery condition) died soon after germination, indicating that full exposure to light has adverse effect on *C. albidum* seedling growth. Seedlings development was best under low light environment like 40 % and 60 % light intensities. Mean total height was 15.2cm; 14.3 cm and 8.8 cm under 40 % light intensity, 60 % light intensity and forest canopy, respectively while collar diameter was 0.44 cm, 0.31 cm and 0.25 cm under 40 % light intensity, 60 % light intensity and forest canopy, respectively. Except collar diameter, both 40 % and 60 % light intensities had similar effect on all growth parameters. Seedlings under 40 % light intensity had a significantly higher collar diameter than those under 60 % light intensity. Total biomass accumulation after three months of growth was 0.82g (60 % light intensity), 0.66g (40 % light intensity) and 0.62g (under forest canopy). Seedlings under forest canopy had very poor growth rate, suggesting the *C. albidum* seedlings may not perform optimally under high shade environment. Thus, *C. albidum* seedlings should not be raised under full light or high shade environment. For optimum growth, the seedlings should be raised under reduced light environment (e.g. 40–60 % light intensities).

Keywords: Domestication, early growth, germination, light intensity, Nigeria