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Domestication of Shea Tree (*Vitellaria paradoxa* C.F. Gaertn) via *ex-vitro* Propagation

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Abstract

Horticultural propagation of the Shea tree (*Vitellaria paradoxa* C.F. Gaertn) is constrained by its long gestation period and long tap root of seedlings which makes transplanting very difficult. We therefore investigated the effect of heat (high temperature), Gibberillic Acid (GA3) and mechanical scarification on reduction of gestation period and seedling production in Shea. Seeds were kept in the oven at temperatures ranging from 30–60°C for 3, 6, 9 or 12 hours before sown in soil and monitored for germination. The incubation of seeds at 30°C for either 3 or 6 hours prior to sowing improved germination over the control treatment. To further improve germination, seeds were soaked in different concentrations of GA3 (0, 5, 10, 15 or 20%) for 24, 48, 72 or 96 hours. Germination of seeds was influenced by the presence and concentration of GA3 in the soaking medium. Seeds soaked in 20% GA3 for 48 hours resulted in the highest percentage germination, mean number of leaves and seedling height 12 weeks after sowing. However, soaking of seeds in GA3 beyond 48 hours decreased percentage germination irrespective of the concentration. Also, seeds soaked in higher GA3 concentrations developed thin, fibrous root structures compared to controls which had a long and thick tap root. Mechanical scarification of seeds involved the complete or partial removal of seed testa prior to sowing in soil. The presence or absence of the seed testa influenced radicle emergence and growth affecting days to germination. This study has shown that both heat and GA3 can enhance seedling production of Shea promoting propagation and large scale cultivation.

Keywords: Emergence, germination, gibberellic acid (GA3), seedling height, testa