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# Domestication Potentials of Irvingia Gabonensis: Farm Level Tree Growth Characteristics Assessment, Fruit Phenology and Effect of Light Intensity on Seed Germination

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**Abstract**

Throughout the tropics, there are indigenous forest tree species that produce locally important NTFPs, thus contributing to food security and increasing diversity of foods necessary to reduce monotony in rural people's diets. This study examines tree growth characteristics, fruits phenology and germination of Irvingia gabonenesis (var, gabonensis) seeds under different light intensities. Ten villages with high abundance of *I. gabonensis* trees were purposefully selected from rainforest and derived savannah ecosystems of Ondo State, Nigeria. Ten trees were selected from each village, their age and silvicultural history obtained from their owners and their growth parameters measured. Fruits were harvested from each tree and their phenology investigated. Mean tree age across the villages ranged from 6 to 47 years, with trees in rainforest being older (mean: 40—47 years) than those within savannah ecosystem (mean: 6—16 years). Thus, *I. gabonensis* trees within rainforest are aging and need to be replaced. 88 % of trees in derived savannah were planted against only 2 % of those within rainforest, thus indicating higher domestication of the species in derived savannah and explaining the lower age of the trees in this ecosystem. Variation in tree growth characteristics is as follows: total height 5.1—28.8m; dbh 16.5—125.3cm; crown height 3.0—20.0m; crown diameter 1.3—24.0cm; leaf length 5.2—14.6 cm and leaf width 2.7—7.2 cm. Fruit phenotypic variation is as follows: length 4.65—7.1cm; width 5.0—7.2cm; weight 64.7—202.1g; flesh weight 55.1—177.70g; flesh depth 1.0—2.2cm; seed length 3.0—5.0cm; seed width 2.5—3.9 cm; seed weight 9.6—25.4g and kernel weight 1.5—6.8g, which reveals a wide variation in *I. gabonensis* fruit. Seed germination commenced on the 21$^{st}$ and ended on the 68$^{th}$ days after sowing. Seeds sown under 40 % and 100 % light intensities and control had mean cumulative germination of 65.5 % while those under 60 % light intensity had 61.8 % germination. The non-significant difference in seed germination under the different treatments implies that germination of *I. gabonensis* seeds is not affected by light environment.

**Keywords:** Domestication, fruit phenology, germination, Growth characteristics, *Irvingia gabonensis*, light intensity

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