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**Eco-zone variation in early growth and seedling morphology of *Jatropha curcas* in nursery environment in southern guinea savanna, Nigeria**

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**Abstract**

Scientists reported that *J. curcas* thrive on all environments without stating its responses in growth characters and perhaps yield, across geographic regions. That assertion imply that seed sourcing outside a geographic region is not worthwhile. The general method of propagation is by stem. We carried out this study to investigate differences in early growth morphology of *J. carcus* across four ecological zones in Nigeria to determine best provenance for plantation establishment considering its role in carbon sequestration. Matured seeds were collected from four ecological zones and raised in nursery environment of the Department of Forestry, wildlife and Fisheries of Nasarawa State University Lafia Campus, Nigeria. Seeds were planted in prepared nursery in complete randomized design (CRD) with four replications per ecological zone. The experiment lasted for 12 weeks. Growth parameters were assessed. Collected data were subjected to statistical analysis. Analysis of variance (ANOVA) revealed that plant height, collar diameter, number leaves and stalk length were highly significantly different ( $p \leq 0.1$ ) from each other. Mean of least significant difference test shows that Gusau provenance from the Northern Guinea savanna, gave the best values of 16.010 cm for height, 5.720 cm for collar diameter, 9.685 cm for number of leaves, and 8.827 cm for stalk length. Mean percentage growth were highest within the first 2 weeks for all parameters investigated. Measured parameters of plant from Lafia provenance were the least. *J. curcas* varies in growth characteristics across ecological zones. Best provenance for Southern Guinea savanna of Nigeria is Gusau, in Northern Guinea savanna.

**Key words:** Eco-variation, provenance, seedling morphology, *Jatropha carcus*, carbon sequestration.