

# **Germination and growth performance of selected provenances of *osyris lanceolata* in Kenya.**

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## **Abstract:**

Scientific information on the silviculture of *Osyris lanceolata* in Kenya is inadequate at a time when this plant species is facing major threats of extinction mainly from human activities. As a strategy against extinction, domestication of this species is necessary. Unfortunately, there are no provenances that can confidently be recommended to farmers as suitable seed sources because germination and growth performances of possible provenances largely remain unknown. The general objective of this study is to generate scientific information on germination and growth performance of selected provenances of *Osyris lanceolata* in Kenya that could facilitate its domestication, thus furthering Agroforestry and Development in rural Kenya, and contributing to conservation of this species. Provenances selected for study include Ngangao forest (Taita County, Coast Province), NgubiKarare forest (Kiambu County, Central Province), Wikililye Location, (a farming area in Kitui County, Eastern Province) and Sagalla Location, (a farming area, rata County, Coast Province). Specific objectives have been achieved by seeking answers to three research questions found appropriate for this study. In each provenance, fruits were collected from at least 30 randomly selected mother trees, spaced at least 100m apart. Seed germination and seedling growth data were analyzed using Non- statistical methods (germination tests) and statistical methods (ANOVA, Student's t-test and Simple Linear Regression) were used in data analysis. Germination tests revealed existence of differences among the provenances. Notable among these were germination percentages and germination capacities among others. ANOVA did not indicate germination means among the four provenances to be different. Neither did Student's t- test indicate differences observed between means of the various experimental and control groups (on treating seeds with aerosol smoke and using *Cajanus cajan* as host to seedlings) to be statistically significant despite the observed improvements in germination and growth performances. A number of conclusions are made: *Osyris lanceolata* populations in the four provenances are of narrow genetic base; seed germination in these provenances is affected by a multiplicity of dormancies; good germination performance is not an indicator of good growth performance after the nursery stage; forest provenances are better performers growth-wise, but not necessarily so germination-wise. A number of recommendations are made. Notable among these are the need to establish the various dormancies affecting germination, need to diversify the range of potential host species, research on the nature of relationship with host, research on smoking levels that would produce best germination results, research on biological control for the Sandalwood bug (*Dismengistus sanguiensis*), need for on-farm trials jointly with KFS, KEFRI and other collaborators as part of Sandalwood domestication process.