

Adaptation of Sub Saharan African *Faidherbia albida* (Del.) A. Chev. provenances in the Sudano–Sahelian climatic condition of Cameroon

Tagne Tamkam Brice Aubin¹, Tchatchoua Dorothy Tchabda^{1*}, Caspa Roseline Gusua², Scott Poethig³, John E. Carlson⁴, Tetyana Zhebentyayeva⁴

¹The National Advanced School of Engineering, University of Maroua, BP 46 Maroua, Cameroon.

²Institute of Agricultural Research for Development (IRAD) Forest and Wildlife Section. P.O. Box 2123 Yaounde Cameroon.

³Department of Biology, University of Pennsylvania Philadelphia, PA 19104, USA.

⁴Department of Ecosystem Science and Management, Pennsylvania State University, University Park PA 16802 USA.

*Corresponding author: Tchatchoua Dorothy Tchabda. Email: <d.tchatchoua@yahoo.com> Tel: +237696010732

Keywords: *Faidherbia albida*, Provenances, Far North region, Cameroon, Adaptability, Reforestation

Date of Acceptance 30/06/2021, Publication date 30/09/2021, <http://m.elewa.org/Journals/about-japs/>

1 ABSTRACT

To provide a suitable seed source for the reforestation program in Cameroon, a nursery trial was set up in the Diamare Division of the Far North region of Cameroon. The aim was to assess the adaptation of 23 provenances of *Faidherbia albida* to the climatic conditions of Far North Cameroon. A randomized complete block design for single tree plots was used for the nursery trial. Traits of adaptation (survival rate, height of the plant, root collar diameter, number of leaves, number of leaflets, number of bi-pinnate leaves at the last formed leaf and number of branches) were assessed at 30, 60 and 90 days after sowing (DAS). The results obtained showed variations in the expression of performance of provenances with the Rama provenance from Ethiopia among the best for most growth traits. Though Rama had the highest values for growth traits among provenances, seeds sourced from Ethiopia were not among the source countries with the highest growth traits. Because seed sources from most Southern African countries were among the best performing provenances, the Southern African region overall was considered best for growth traits on a regional basis. Furthermore, the South African region was also best in the trend for survival, followed by Central Africa. Although seedlings from the Rama provenance in Ethiopia grew fast, the percentage survival of seedlings from the Rama provenance and from the East Africa region overall was the lowest in terms of survival. It was notable that Rama ranked closely with South Africa provenances for growth traits and while it ranked with Central Africa provenances for percentage survival. Generally, provenances from the South African region performed best in this study in Cameroon. These results will be used in *Faidherbia albida* improvement programs intended to ensure the survival and sustainability of the species in Cameroon as well as for use in reforestation programs.