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Effects of harvesting methods and frequency on biomass production and growth of *Afzelia africana*

Agbatan Marc Koutchoro[1], Alain Sèakpo Yaoitcha[2], Laurent Gbenato Houessou[1]

[1] *University of Parakou, Laboratory of Ecology, Botany and Plant Biology (LEB), Benin*
[2] *National Institute of Agriculture Research of Benin (INRAB), Benin*

Abstract

In tropical regions, the dependence of livestock systems on fodder trees during the dry season leads to the scarcity of woody species and threatens the sustainability of these resources. Producing forage biomass in nurseries using woody species offers a sustainable alternative for supplying fodder while preserving mature trees. This study aimed to evaluate the influence of harvesting techniques and frequencies on biomass production, growth, and leaf regeneration of *Afzelia africana* in the nursery. We conducted a nursery experiment at the Baka farm (Faculty of Agronomy, University of Parakou) using a completely randomised factorial design combining two harvesting methods (clear cutting after the first three leaves and on-plant harvesting while sparing the terminal buds) and two cutting frequencies (monthly and bimonthly), with three replicates per treatment. Harvesting technique had no significant effect on total biomass, although on-plant harvesting produced slightly more biomass than clear cutting. Plant height growth was significantly influenced by harvesting technique: on-plant harvesting resulted in a more moderate decline in growth over time, whereas clear cutting caused a more pronounced reduction. No significant effect of harvesting technique was observed on stem diameter growth. Cutting frequency significantly affected leaf regeneration only under the on-plant harvesting method, with bimonthly cutting promoting higher regeneration. The combination of on-plant harvesting and bimonthly cutting frequency optimised leaf regeneration without reducing biomass production or plant growth in *A. africana*. These results provide useful insights for the sustainable management of fodder woody species, helping to reconcile forage production with the conservation of threatened woody species.

Keywords: Harvesting frequency, harvesting technique, leaf regeneration, livestock feeding, tree pruning

Contact Address: Agbatan Marc Koutchoro, University of Parakou, Laboratory of Ecology, Botany and Plant Biology (LEB), 03 BP125, Parakou, Benin, e-mail: marckoutchoro@gmail.com