REVIEWER'S REPORT

Manuscript No.:   IJAR-53221   Date: 10 August 2025

Title: MORTALITY OF EXOTIC SPECIES (Eucalyptus deglupta B., 1863, Pinus caribeae M., 1851, and Gmelina arborea R., 1814) IN CELLUCAM PLANTATIONS NEAR EDEA (LITTORAL, CAMEROON) AND AT THE INSTITUT SUPERIEUR AND THE MBAIKI INSTITUTE OF RURAL DEVELOPMENT (CENTRAL AFRICAN REPUBLIC)

Recommendation:

Accept as it is ………………………………

Accept after minor revision………………

Accept after major revision ………√………

Do not accept (*Reasons below*) ………

Rating	Excel.	Good	Fair	Poor
Originality		√		
Techn. Quality			√	
Clarity			√	
Significance		√		

Reviewer Name: Dr Ahmed M. Saqr   **Date:** 10 August 2025

Reviewer's Comment for Publication.

(*To be published with the manuscript in the journal*)

The reviewer is requested to provide a brief comment (3-4 lines) highlighting the significance, strengths, or key insights of the manuscript. This comment will be Displayed in the journal publication alongside with the reviewers name.

This manuscript offers a timely, comparative assessment of exotic plantation performance across two Central African sites with contrasting management histories. By jointly reporting density, DBH, basal area, mortality, and survival for Eucalyptus, Pinus, and Gmelina, it underscores how maintenance strongly shapes stand outcomes. The cross-site design is a clear strength, yielding actionable insights for silviculture and plantation stewardship in tropical contexts. With strengthened statistical reporting and clearer figures/tables, the study can provide a solid evidence base for management decisions.

Detailed Reviewer's Report

Thank you for the opportunity to review the manuscript entitled "Mortality of exotic species (Eucalyptus deglupta B., 1863, Pinus caribeae M., 1851, and Gmelina arborea R., 1814) in CELLUCAM plantations near Edea (Littoral, Cameroon) and at the Institut Supérieur and the Mbaïki Institute of Rural Development (Central African Republic)." For [Journal name], this

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study addresses a relevant topic in tropical silviculture and plantation ecology, comparing stand structure and mortality/survival of three exotic species across two sites with contrasting management histories. The contribution is potentially valuable, but the manuscript requires substantial revisions in clarity, methodological transparency, statistical reporting, figure/tables presentation, language, and alignment between results and interpretations.

Decision: Major revision

Major comments (by section)

1. Title and Scope

- *Title: The scientific names include authors and years but appear inconsistent and possibly incorrect (e.g., "Pinus caribeae M., 1851"; "Eucalyptus deglupta B., 1863"; "Gmelina arborea R., 1814"). Please verify accepted botanical authorities and correct spelling (e.g., Pinus caribaea; Eucalyptus deglupta; Gmelina arborea) and standardize authorship per recognized plant databases. Also clarify whether the study compares two sites (CELLUCAM vs ISDR/Mbaïki) and whether the focus is mortality/survival and stand structure; consider a shorter, clearer title that reflects the comparative design.*

2. Abstract

- *Could you provide specific quantitative results in the abstract for each key metric (density, mean DBH, basal area, mortality, survival) by species and site, with sample sizes and variance (means ± SD/SE) rather than only qualitative statements?*

- *The abstract attributes high mortality to multiple causes (lack of maintenance, herbivory, fungi/bacteria) without direct evidence in this study. Please specify which inferences are supported by your data versus literature-based hypotheses, and temper causal language accordingly.*

- *The abstract mentions ANOVA/Tukey but does not report test statistics or effect sizes. Include concise statistics (e.g., F, df, P) for the primary comparisons, or remove if space is limited and ensure they appear in the Results.*

3. Introduction

- *The introduction mixes broad deforestation context with allelopathy and plantation critiques. Could you tighten the narrative to a clear set of research questions/hypotheses specific to this study (e.g., "We*

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hypothesized that unmanaged CELLUCAM stands have higher mortality and lower density than maintained ISDR stands; we expected DBH and basal area differences to reflect age/management differences.")?

- *Please clarify the age of stands and management history precisely (CELLUCAM: established 1979–1982; no maintenance since 1982; ISDR: established 1990; maintained). State expected implications for density, mortality, and size structure.*

- *Some citations appear duplicated or not specific (e.g., multiple "Delphine BASSOU, 2003" entries). Ensure the literature review focuses on directly relevant works (mortality drivers in tropical plantations, management/silviculture effects, herbivory impacts, disease in Pinus/Eucalyptus/Gmelina).*

4. Materials and Methods

- *Sampling design: You describe four 50 m × 100 m "layons" per plantation, subdivided into 50 m × 50 m units, totaling 2 ha per plantation. Please specify the number of plantations per site sampled, how plantations were selected (randomly? representative?), and whether the same number of layons per plantation was used at both sites. Clarify whether "per plantation" means per species block or per site.*

- *Planting density baseline: Mortality rate relies on the number planted per hectare, derived from spacing. Please report the actual original spacing used for each species/plantation and the documented initial planting densities (if known from company/institute records). If approximated, state assumptions and potential error.*

- *Measurements: State DBH measurement height (1.3 m), instrument used, whether multi-stemmed individuals were present and how handled, and diameter threshold for inclusion.*

- *Statistical analysis: You reference two-factor ANOVA and Tukey tests. Please define factors (site, species), response variables, replication units (plot or subplot), and how independence was ensured. Verify that ANOVA assumptions were tested (normality, homoscedasticity) and describe transformations if used. Specify alpha, software (R version), and packages. Report the number of replicates per factor level.*

- *Basal area: You use $G = \pi D^2/4$ per stem. Please report whether stand basal area per hectare was computed (sum of stems per plot scaled to*

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ha), and present both per-stem averages and stand-level basal area per ha to avoid misinterpretation.

- *Ethics/permits and access: Indicate permissions for accessing CELLUCAM site and ISDR grounds; note that the sites were protected from exploitation per your text—please substantiate.*

5. Results

- *Provide complete quantitative summaries in text and/or tables: densities (stems/ha), mean DBH (cm), stand basal area (m²/ha), mortality (%), survival (%) by species and site, with measures of variability and sample sizes. The manuscript currently references figures but lacks the numeric values.*

- *Statistical reporting: For each ANOVA, provide F-statistics, degrees of freedom, P-values; for Tukey, give pairwise comparisons with adjusted P-values. Avoid phrases like "highly significant" without statistics.*

- *Figures and tables: The manuscript references Figures 2–6, but the images are not embedded with clear axes, units, labels, legends, or error bars. Please include high-resolution figures with:*
  - *Clear axis labels (including units),*
  - *Species names spelled correctly and consistently,*
  - *Error bars (SE or 95% CI) and indication of n,*
  - *Caption describing what is plotted and the statistical outcomes,*
  - *A table summarizing all metrics is strongly recommended.*

- *Consistency: You state "no significant differences" in DBH between sites for same species; later, you note significant basal area differences for Pinus versus others on the same site. Ensure internal consistency and reflect this in figures/tables.*

6. Discussion

- *Causality: The text attributes mortality at CELLUCAM to lack of maintenance and herbivory, and possibly pathogens, but no direct evidence (e.g., browsing damage assessment, pathogen surveys) is presented. Please reframe as plausible explanations, acknowledge the observational design, and discuss alternative explanations (e.g., soil/site differences, age/cohort effects, initial stock quality).*

- *Age and confounding: CELLUCAM stands (est. 1979–82) are older than ISDR (1990). How might age and successional dynamics confound density/mortality comparisons? Consider separate analyses*

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controlling for age or present age-stratified expectations and limitations.

- *Species-specific patterns: You suggest lower mortality in Pinus due to needle resistance to herbivores. Can you support this with your own field observations (evidence of browsing on leaves of Eucalyptus/Gmelina vs Pinus)? If not, temper and cite appropriately.*
- *Management implications: Translate findings into actionable silviculture (e.g., thinning schedules, weed control, protection against herbivory, monitoring protocols), and align with the study's metrics. Avoid broad claims about "green deserts" unless tied to your data (understory diversity not measured here).*
- *Limitations: Explicitly discuss limitations—lack of baseline planting records (if so), potential spatial autocorrelation, unmeasured environmental covariates (soil, topography, hydrology), absence of health/disease diagnostics, single-time snapshot (no temporal dynamics).*

7. Conclusion

- *The conclusion should succinctly reflect the evidence from your results rather than general literature-based statements. Reiterate the core, supported finding (higher mortality and lower survival/density at unmanaged CELLUCAM compared to maintained ISDR) with numbers, acknowledge limitations, and provide specific, evidence-based recommendations for plantation management and future monitoring.*
- *Avoid extending to national policy prescriptions unrelated to the presented data. If retaining broader implications, clearly separate them as perspectives.*

8. Figures, Maps, and Images

- *The study cites Figure 1 (administrative division of Cameroon) and a map of the ISDR study area. Please ensure maps include scale bars, north arrows, coordinates, and clear site/plot locations; verify that permissions and sources are properly credited. If the maps are adapted from Nachoui (2021), state this precisely.*
- *Replace low-information administrative maps with a concise location map plus a schematic of plot layout and sampling design. Ensure species block locations are indicated if relevant.*

9. References

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- *Ensure consistency in formatting (journal names, italics, accents, capitalization), remove duplicates (e.g., multiple "Delphine BASSOU 2003" entries), and verify the accuracy of all citations. Several entries appear incomplete or mixed with web descriptors. Confirm that all in-text citations are in the reference list and vice versa.*
- *Check the botanical authorities and taxonomic references; consider adding authoritative botanical sources for species names.*
- *Where you make specific claims (e.g., herbivory patterns, disease susceptibility, silvicultural standards), include recent, peer-reviewed literature specific to the species/region if available.*

Minor comments (by section)

1. Abstract

- *Clarify whether "basal area" refers to per-stem average or stand basal area per hectare; use standard terminology (m²/ha) if reporting stand-level values.*

2. Introduction

- *Streamline background statistics on national forest cover and deforestation; keep only what directly motivates the study objective and site selection.*

3. Study Sites

- *Provide climatic context (mean annual rainfall, temperature ranges) and soil types for both sites to aid interpretation of species performance.*

4. Materials and Methods

- *Standardize terminology: use "DBH" rather than "diameter at base" where appropriate, and confirm measurement height at 1.3 m.*

5. Results

- *Use consistent significant figures and units across all metrics; avoid mixing percentages and proportions without clarity.*

6. Figures

- *Correct species spelling consistently (Pinus caribaea; Eucalyptus deglupta; Gmelina arborea) in all figure labels and captions.*

7. Discussion

- *When referring to "protected area" and "absence of anthropogenic activities," provide evidence or cite a management plan; otherwise, qualify the statement.*

8. Language and Formatting

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- *Improve English grammar and flow throughout; several sentences are long and repetitive. A thorough language edit will enhance readability and professional tone.*