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REVIEWER'S REPORT

Manuscript No.: **IJAR-53079** Date: 01-08-2025

Title: EFFECT OF CROSSING BETWEEN TWO GENETICALLY DISTANT STRAINS OF CALLOSOBRUCHUS MACULATUS ON THEIR BIODEMOGRAPHIC PARAMETERS

Recommendation:
Accept as it is .....yes.....
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: Mir Tanveer

Reviewer's Comment for Publication.

The manuscript provides a detailed experimental analysis of the impact of genetic crossing between two strains of *Callosobruchus maculatus* on their biodemographic parameters. The study is highly relevant in the context of cowpea production, which is of great agricultural and economic importance, particularly in Africa where post-harvest storage pests significantly reduce yields. By addressing the effects of crossbreeding on reproductive and developmental traits, the research contributes valuable insights into evolutionary processes and pest population dynamics.

The abstract concisely presents the study's findings. It indicates that fecundity remained largely unaffected by gene flow, while egg-laying patterns showed concentration in the early days of female life, with a peak on the second day. Importantly, egg fertility improved through crossbreeding, with fertility levels reaching 60%. While larval survival remained relatively stable at around 78%, emergence rates were higher compared to control groups. The observed female-biased sex ratio further underscores the biological impact of crossbreeding. Developmental cycle duration was shown to vary depending on the seed type, with significant reductions observed in Barkedji seeds, but no notable change for Fouta seeds. These results highlight the combined effects of genetic strain, geographical origin, and substrate type on biodemographic parameters.

The introduction establishes a strong rationale for the study by situating it within the broader challenge of food security and the need to limit post-harvest losses caused by insect pests, particularly bruchids. By emphasizing the scale of cowpea production and its dependence on effective pest control, the manuscript underscores the practical and applied significance of the research.

Overall, the study demonstrates methodological rigor and presents findings that contribute to a deeper understanding of the role of genetic diversity and crossing in shaping biodemographic traits of storage

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pests. The results provide useful knowledge for both evolutionary biology and applied entomology, with implications for pest management and crop protection strategies.

Conclusion of Review:
The manuscript offers a clear and well-supported investigation into the effects of crossbreeding on the reproductive and developmental traits of *Callosobruchus maculatus*. By linking genetic variation with biodemographic outcomes, it enriches current understanding of pest population dynamics and contributes to broader discussions on food security and sustainable agriculture in agro-ecological zones such as Senegal.