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| Journal Name: | [**PLANT CELL BIOTECHNOLOGY AND MOLECULAR BIOLOGY**](https://www.ikprress.org/index.php/PCBMB) |
| Manuscript Number: | **Ms\_PCBMB\_13344** |
| Title of the Manuscript: | **Marker-Assisted Introgression of bmr6 allele into sweet sorghum and high biomass sorghum lines for improving biomass-based biofuel yield** |
| Type of the Article |  |

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| **PART 1: Comments** |
|  | **Reviewer’s comment****Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | **Author’s Feedback** (It is mandatory that authors should write his/her feedback here) |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | The manuscript introduce the use of brown midrib 6 (bmr6) allele into high-biomass sorghum lines to tackle the resistance of lignocellulosic biomass to breakdown. Through a combination of molecular marker-assisted selection and traditional backcrossing ad repeated across several growing seasons, this study outlines a practical, scalable approach to tweaking cell wall composition while preserving solid agronomic traits. This approach also offers a working model for how a single-gene tweak can move from lab to field without losing relevance or reliability. |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | The current title is clear but could be more impactful by emphasizing both the technical approach and the application.Suggested Alternative: “Accelerating Low‑Lignin Sorghum Development via Marker‑Assisted Backcrossing of Brown Midrib 6 for Enhanced Bioethanol Yield” |  |

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| **Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section?****Please write your suggestions here.** | The abstract successfully outlines the research objectives, germplasm used, and key findings. However, the following improvements are suggested:1. Include specific percentages of lignin reduction and ethanol

yield improvement observed in BC₂F₂ lines.1. Briefly mention the KASPar SNP assay and chi‑square

validation to underscore the rigor of genotypic confirmation.1. Conclude with a concise remark on how these lines will integrate into existing breeding programs and impact bioenergy markets.
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| **Is the manuscript scientifically, correct? Please write here.** | The study design is robust with appropriate crossing schemes, reliable foreground selection via SNP genotyping, and standard phenotypic confirmation. Most of the statistical analyses (chi‑square segregation tests) are correctly applied and interpreted, while the data presentation in R‑generated cluster plots is sound.However, please ensure that all assumptions for chi‑square tests (e.g., expected cell counts) are explicitly stated in the Method section to ensure reproducibility. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them****in the review form.** | The reference list covers foundational literature on bmr sorghum and marker‑assisted selection, including works up to 2022. Please add more recent works (especially up to 2025, if possible). |  |

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| **Is the language/English quality of the article suitable for scholarly communications?** | Overall, the manuscript is well written for a scholarly audience. The sentence structure is clear and terminology consistent. However, some sentences might be suffer from passive‑voice overuse. Also, please standardize the verb tense to elevate readability. |  |
| **Optional/General** comments | Some notable suggestion for improvement as listed as follows:* **Figure and Table Integration**: Please check and ensure all figure and table is explicitly referenced in the Results text and that captions are self‑contained. Otherwise, remove the irrelevant figure and table as they are not discussed.
* **Discussion Depth**: Please elaborate on the potential trade‑offs between reduced lignin content and drought or pest resistance. Remember to cite some recent field‑trial data.
* **Future Directions**: Suggest exploring CRISPR‑based allelic variation in CAD2 to fine‑tune lignin biosynthesis beyond bmr6 alone. The author might include this in the conclusion part.
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| **PART 2:** |
|  | **Reviewer’s comment** | **Author’s Feedback** (It is mandatory that authors should write his/her feedback here) |
| **Are there ethical issues in this manuscript?** | *(If yes, Kindly please write down the ethical issues here in detail)*No. |  |

 **Reviewer details:**

 **Hoo Peng Yong, Malaysia**