Review Form 3

Journal Name:	**Journal of Experimental Agriculture International**
Manuscript Number:	**Ms_JEAI_125288**
Title of the Manuscript:	**CHARACTERIZATION OF BREAD WHEAT GENOTYPES USING SSR MARKERS FOR TERMINAL HEAT TOLERANCE**
Type of the Article	

Review Form 3

PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. 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. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.	This manuscript is important for the scientific community as it addresses a critical challenge in global wheat production: terminal heat stress. By utilizing SSR markers, the study provides valuable insights into the genetic diversity and heat tolerance of bread wheat genotypes, which is crucial for developing resilient cultivars capable of sustaining productivity under adverse environmental conditions. The findings contribute to the understanding of heat tolerance mechanisms, thereby supporting future breeding programs aimed at enhancing food security. I appreciate the manuscript's comprehensive approach to integrating molecular and field data, which strengthens the reliability of its conclusions and highlights potential candidates for heat stress resilience in wheat. However, a clearer explanation of some methodological details would have enhanced the manuscript's accessibility for a broader audience.	
Is the title of the article suitable? **(If not please suggest an alternative title)**	The title "Characterization of Bread Wheat Genotypes Using SSR Markers for Terminal Heat Tolerance" is generally suitable, as it accurately reflects the study's focus on using SSR markers to analyze heat tolerance in wheat genotypes. However, to make it more engaging and precise, I suggest the following alternative title: **"Molecular Characterization of Heat Tolerance in Bread Wheat Genotypes Using SSR Markers: Implications for Breeding Resilient Cultivars."** This title emphasizes the molecular aspect of the research, highlights its relevance to heat tolerance, and points to its practical implications for breeding.	

Review Form 3

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 is generally comprehensive, covering the study's objective, methods, and key findings. However, it could benefit from a clearer structure and inclusion of more specific details to make it easier to follow for readers. Here are some suggestions for improvement: Suggested Revisions: 1. Add More Context in the Background: Include a brief statement about the global importance of wheat and the challenges posed by terminal heat stress to crop production. This will help set the context for why heat tolerance studies are necessary. 2. Clarify the Objective: The objective is stated, but it could be rephrased for clarity, such as: “The objective of this study was to characterize the genetic diversity and heat tolerance of widely grown bread wheat genotypes using SSR markers to identify heat-tolerant cultivars for breeding programs in Bangladesh.” 3. Expand on the Results: Include specific details, such as the range of genetic similarity (0.00 to 0.925), the number of alleles found, and highlight the most notable genotypes identified for heat tolerance. 4. Mention Practical Implications: Add a sentence at the end of the abstract indicating how the findings can be used in future breeding programs or their significance for enhancing wheat resilience. Suggested Modified Abstract: “Wheat is a major global food crop, but its productivity is increasingly threatened by terminal heat stress due to climate change. This study aimed to characterize the genetic diversity and heat tolerance of widely grown bread wheat genotypes using SSR markers to identify heat-tolerant cultivars adaptable to various regions in Bangladesh. A total of 15 genotypes were screened, and 13 polymorphic SSR markers were used to determine the genetic similarity and categorize genotypes based on their heat tolerance. The genetic similarity coefficients ranged from 0.00 to 0.925, with genotypes BARI Gom 25, BARI Gom 28, BARI Gom 29, BARI Gom 30, and BARI Gom 31 showing superior tolerance under late-sown conditions. The results demonstrate the potential of SSR markers for effective screening of heat tolerance in wheat, providing valuable information for breeding programs focused on improving heat resilience in wheat.” This version is more structured, highlights key results, and explains the practical relevance of the study.	
Are subsections and structure of the manuscript appropriate?	Yes, the manuscript is generally well-structured, with clear subsections that appropriately divide the content. The subsections such as Abstract, Introduction, Materials and Methods, Results, and Discussion are logical and follow the conventional structure of scientific research articles. However, there are a few areas where minor improvements could enhance readability and clarity: Suggested Adjustments: 1. Introduction: - The introduction is well-organized, but it could be shortened slightly to avoid redundancy in explaining the significance of heat stress on wheat. Condensing some background information would help maintain focus on the research gap and objectives. 2. Materials and Methods: - This section is detailed, but it would benefit from breaking down the methodology into smaller sub-sections, such as Plant Material, DNA Extraction, SSR Analysis, and Statistical Analysis, to make it easier for readers to follow each step. 3. Results: - The Results section is comprehensive, but including subheadings for different types of data (e.g., Genetic Diversity Analysis, Cluster Analysis, Heat Susceptibility Index) would help readers navigate the findings more easily. - Consider summarizing key findings in a brief concluding paragraph at the end of the section.	

Review Form 3

	4. Discussion: - The discussion is thorough but could be separated into smaller sub-sections to focus on different aspects, such as Comparison with Previous Studies, Implications for Breeding Programs, and Limitations and Future Directions. 5. Tables and Figures: - Ensure that all tables and figures are referenced in the text and include a brief caption summarizing the main takeaway for each one. - The manuscript could include more visual elements (e.g., heat maps, dendrograms) to represent the genetic distance and similarity more effectively. Overall, the subsections and structure are appropriate, but adding clearer subheadings and streamlining some sections would improve readability and presentation.	
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.	The manuscript appears to be scientifically robust and technically sound due to its use of well-established molecular techniques, such as SSR markers, to evaluate genetic diversity and heat tolerance in bread wheat genotypes. The methodological details, including the selection of primers and statistical analysis, are clearly outlined, making the experiments reproducible. The study's results are supported by appropriate statistical measures like Polymorphism Information Content (PIC) values and genetic distance coefficients, which add rigor to the interpretation of genetic diversity. Furthermore, the integration of both molecular and phenotypic data strengthens the validity of the findings and demonstrates a comprehensive approach to understanding heat tolerance in wheat, making the conclusions reliable and meaningful for future breeding programs.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. **-**	The references used in the manuscript are relevant to the study and provide sufficient support for the background and findings. However, a few of the cited studies are somewhat outdated, particularly those published over a decade ago. Including more recent literature (from the past 5 years) would strengthen the manuscript by providing up-to-date insights on advancements in wheat breeding, genetic diversity studies, and molecular marker technologies. Suggested Additional References: 1. Recent Reviews on Heat Tolerance in Wheat: - For a broader context, recent reviews on heat stress in wheat, such as studies on QTL mapping or genetic approaches for heat tolerance, should be included. Examples include: - "Genetic mechanisms of heat stress tolerance in wheat: Current knowledge and prospects for breeding," Frontiers in Plant Science (2021). - "Advances in Genomic Approaches to Enhance Heat Tolerance in Wheat," Journal of Experimental Botany (2020). 2. Updated Research on SSR Markers in Wheat: - Incorporating newer studies that utilize SSR markers or other molecular tools in wheat heat tolerance research would help contextualize the findings. Consider including: - "Recent Advances in Wheat Molecular Breeding Using SSR and SNP Markers for Abiotic Stress Tolerance," Plants (2022). 3. Articles on Modern Breeding Techniques: - Adding references on CRISPR or other genomic editing techniques in wheat breeding could broaden the implications of the study and suggest future directions. By incorporating more recent and diverse references, the manuscript would align better with current research trends and highlight its relevance in the rapidly evolving field of molecular breeding.	

Review Form 3

Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**	The language quality of the article is generally good and suitable for scholarly communication; however, there are a few areas where minor revisions could enhance readability and clarity. Some sentences are lengthy and contain multiple ideas, making them harder to follow. Simplifying complex sentences and avoiding redundant phrases would improve the flow of the manuscript. Additionally, a few technical terms could benefit from brief explanations to ensure broader accessibility to readers who may not be familiar with advanced molecular techniques. Suggested Minor Revisions: 1. Simplify Complex Sentences: - For example, the sentence: “The first stage of heat tolerant breeding follows on the molecular and biochemical characterization and classification of wheat genotypes.” could be revised to: “The initial stage of breeding for heat tolerance involves molecular and biochemical characterization of wheat genotypes.” 2. Grammar and Syntax: - Address minor grammatical errors such as missing articles (e.g., "a" or "the") and ensure correct verb agreement. 3. Use of Scientific Terminology: - Ensure consistency in the use of technical terms and consider defining specialized abbreviations like HSI (Heat Susceptibility Index) upon first mention. 4. Punctuation: - Use commas more effectively to separate ideas within sentences, which will improve readability. These minor language adjustments will enhance the manuscript’s clarity and make it more accessible to a wider scientific audience.	
Optional/General comments	Overall, the manuscript is a valuable contribution to the field of plant genetics and breeding, particularly in the context of improving heat tolerance in wheat. The combination of molecular and phenotypic analyses provides a solid foundation for understanding genetic diversity and selecting genotypes with desirable traits. The research is timely and relevant given the increasing global temperatures and the need for climate-resilient crops. However, the manuscript could be further strengthened by including a dedicated Conclusion section that succinctly summarizes the key findings and their practical implications. Additionally, highlighting the potential applications of these findings in breeding programs or suggesting directions for future research would make the manuscript more impactful. In general, the study is well-conceived, and the methodologies are sound. With minor revisions in language and structure, the manuscript would be significantly enhanced for publication. Justification: - While the study is scientifically valid and presents valuable insights, it requires major revisions to improve certain aspects such as language clarity, structuring of sections, and inclusion of more recent references. - The methodology, although sound, could be presented more clearly with subheadings to enhance readability. - The discussion needs to be more focused, with a clearer emphasis on the implications of the findings for future research and practical applications. - Overall, the manuscript has potential but would benefit significantly from restructuring and further refinement. This score reflects a manuscript that has strong content but requires substantial revisions before it can be considered for publication.	

Review Form 3

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. 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 details)*	

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