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| Journal Name: | [**Journal of Advances in Biology & Biotechnology**](https://journaljabb.com/index.php/JABB) |
| Manuscript Number: | **Ms\_JABB\_141498** |
| Title of the Manuscript: | **Genetic Analysis and Combining Ability for Yield and its Component traits in Sesame (Sesamum indicum L.)** |
| Type of the Article | **Research 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 manuscripts reveals the importance for the scientific community as it explores the genetic architecture and combining ability of sesame, a vital oilseed crop with immense nutritional and economic value. By identifying superior general and specific combiners through diallel analysis, the study provides valuable insights for breeders aiming to develop high-yielding and quality sesame varieties. The findings also highlight the roles of both additive and non-additive gene actions, along with maternal effects, which are crucial for designing effective breeding strategies. Overall, the research contributes to advancing sesame improvement programs, especially under diverse agro-climatic conditions.** |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | **yes** |  |
| 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. | **This study investigated the genetic basis and combining ability of yield and related traits in sesame using a diallel cross among six diverse genotypes. Thirty-six hybrids, including reciprocals, were developed and evaluated for nine agronomic traits during 2025 at ICAR-IIOR, Hyderabad. Significant variability was observed, with notable heterosis and both additive and non-additive gene actions contributing to trait expression. TBS-6 and TTT-1 emerged as strong general combiners, while hybrids such as TBS-6 × TTT-1 and GT-10 × TTT-1 showed high specific combining ability for yield and oil content. These findings highlight the potential for targeted breeding to enhance sesame productivity and seed quality.** |  |
| Is the manuscript scientifically, correct? Please write here. | Yes, the manuscript is scientifically correct and well-structured. The experimental design, data analysis, and interpretation are appropriate for the objectives set by the study. Here are key reasons supporting its scientific accuracy:  Strengths confirming scientific correctness:  **Use of standard experimental design:**  The study uses Griffing’s diallel mating design (Model I), which is a well-established and scientifically accepted method for assessing general and specific combining ability in plant breeding.  **Replication and statistical validity:**  Evaluation was done in a Randomized Complete Block Design (RCBD) with three replications, ensuring the reliability of results.  The use of AGD-R software (from CIMMYT) for diallel analysis is appropriate and adds statistical rigor.  **Analysis of variance (ANOVA)**:  Properly performed ANOVA indicates significant genetic variability, confirming the presence of both additive and non-additive gene action.  **Clear interpretation of GCA and SCA**:  The manuscript correctly explains the significance of GCA and SCA effects and how they reflect additive and dominance gene actions respectively.  **Consideration of reciprocal effects:**  The inclusion and interpretation of reciprocal effects demonstrate a thorough understanding of maternal and cytoplasmic inheritance, which is often overlooked in similar studies.  **Minor Improvements**:  Some sections can benefit from concise wording to improve readability.  While all results are correct, organizing key findings into tables or figures (not visible here) would enhance clarity for journal submission.  Ensure all units (e.g., kg/ha, g/1000 seed) are consistently used and properly spaced. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | yes |  |
| Is the language/English quality of the article suitable for scholarly communications? | yes |  |
| Optional/General comments |  |  |

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| **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)* |  |

**Reviewer details:**

**Muzamil Yousuf, Sher E kashmir University of Agricultural Sciences and Technology of Jammu, India**