

Review Form 1.6

Journal Name:	International Journal of Plant & Soil Science
Manuscript Number:	Ms_IJPSS_94000
Title of the Manuscript:	Heterosis Studies For Grain Yield And Yield Components In Rabi Sorghum [Sorghum Bicolor (L.) Moench.]
Type of the Article	Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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PART 1: Review Comments

	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)
Compulsory REVISION comments	<p><i>The purpose is to suggest some hints to make the manuscript more attractive.</i></p> <p>CRc1) The "Conclusions" section is missing. The inclusion of this section is not a mere exercise, but it is essential to further attract the interest of the reader, particularly if there are perspectives of the work. It is advisable to insert a brief concluding section that reports any prospects to be implemented in future investigations.</p> <p>CRc2) Ref. [4] establishes that the productivity of sorghum in India (854 kg ha⁻¹) is much less than the world average of 1457 kg ha⁻¹. However, this data refers to 2019. According to Sorghum production, dated September 2022, in the world (http://www.worldagriculturalproduction.com/crops/sorghum.aspx) Sorghum Production in 2021 was 62.10 million tons. This year's 60.32 estimated millions of tons could represent a decrease of 1.78 million tons or 2.87% in sorghum production around the globe. Sorghum production in India amount to 4,400,000 Metric Tons. Please, update ref. [4] and the information reported on page 1 in the "Introduction" of the manuscript.</p> <p>CRc3) The author rightly stated that the exploitation of heterosis for the hybrid development program must be considered one of the greatest breakthroughs in plant breeding. Table 2. and table 3. illustrated in detail the experimental findings of the study about the heterosis of Sorghum bicolor (L.) Moench, which has been developed by crossing four lines and twelve testers. Based on the experimental data reported in Tables 1., 2. and 3., did the author come up with ideas that may explain heterosis, including dominance, overdominance, and pseudo-overdominance?</p> <p>CRc4) The present investigation is focused on four male sterile lines (185A, RMS2010-10A, RMS2010-24A, 104 A) that were crossed with twelve testers (RSR 950, RSR 1012, RSR 1013, RSR 984, RSR 1014, RSR 1019, RSR 986, RSR 987, RSR 1020, RSR 1027, RSR 1003, RSR 955) in line x testers mating design used to develop 48 F1's hybrids. The results of this investigation are summarised in the tables reported from page 5 to page 12 of the manuscript. However, fixing heterosis so that it continues beyond the F1 generation is a challenging strategy for increasing yield. In this respect, recent research showed that the chromatin remodeler DDM1 appears essential for the development of full heterosis. "Hybrid Mimics", which are pure breeding lines having the characteristics of hybrids and fix heterosis in subsequent generations, would be an option. So, combining heterosis with different characters such as yield heterosis and stress tolerance heterosis could enhance yield. The author is invited to discuss the aforementioned (important) aspects, perhaps adding an extra section concerning the possible perspectives offered by the present study.</p> <p>CRc5) Please, consider also the pedagogical aspect. For example, the reader should be explained why heterosis is agronomically important. Why do we expect that superior performance than their parents can appear as biomass, yield, and tolerance to abiotic and biotic stress? Is this a statistical finding or there are scientific explanations? Why has the interest in Sorghum Bicolor (L.) Moench as a feedstuff increased so much in recent years? Answering all these questions will certainly contribute to making the work more attractive even for a less experienced reader (the author may consider to insert this discussion in the <i>Introduction</i> of the manuscript).</p>	
Minor REVISION comments	<p>MRc1) Please, check the English of the manuscript, some typos have been detected.</p> <p>MRc2) The interpretation of the heterosis cases investigated by the author is missing.</p> <p>MRc3) The author did not compare the results obtained by his/her study with those that recently appeared in the literature.</p> <p>MRc4) The cited references are appropriate, but 18 of them are dated 10, or more, years ago. The most recent is ref. [4], but it refers to the report on "World Agricultural Production" of 2019. So, the list of references is not updated and exhaustive.</p> <p>MRc5) Since this is a subject of popular interest, it is advisable to also consider the pedagogical aspect.</p>	
Optional/General comments	The study is interesting and very topical. However, it is vulnerable in some respects. The suggestions above are meant to fill in some gaps.	

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?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

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