Review Form 3

Journal Name:	**Asian Journal of Advanced Research and Reports**
Manuscript Number:	**Ms_AJARR_125654**
Title of the Manuscript:	**Evaluation of Physicochemical, Functional, and Anti-Nutritional Properties of Soya Bean Varieties in Two Research Centers**
Type of the Article	**Original Research 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.		
Is the title of the article suitable? (If not please suggest an alternative title)		
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.		
Are subsections and structure of the manuscript appropriate?		
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.		
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.		

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Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**		
Optional/General comments	Evaluation of Physicochemical, Functional, and Anti-Nutritional Properties of Soya Bean Varieties in Two Research Centers This study provides a comprehensive evaluation of the physical, functional, and anti-nutritional properties of various soybean varieties cultivated in Ethiopia. The authors effectively demonstrate the significant differences among the examined varieties in terms of seed weight, bulk density, water absorption capacity (WAC), oil absorption capacity (OAC), and concentrations of anti-nutritional factors such as tannins and phytates. The study successfully emphasizes the importance of selecting soybean varieties with optimal physical and functional characteristics to enhance food production and nutritional benefits. Furthermore, it highlights the necessity of employing appropriate processing techniques to mitigate the effects of anti-nutritional factors, thereby improving the practical application of these varieties in food and industrial sectors. ABSTRACT: 1. The importance of soybean cultivation in Ethiopia is emphasized, but the abstract could strengthen the relevance by discussing how these findings can directly address malnutrition and food insecurity issues. 2. The abstract mentions the analysis of "physical properties," "functional properties," and "anti-nutritional factors," but it does not provide enough detail on the methodologies used for these assessments. For example, the specific biochemical techniques used to quantify tannins and phytates should be briefly mentioned to ensure methodological transparency. 3. The abstract mentions the use of GenStat version 18 for statistical analysis, but there is no mention of the type of statistical tests performed or whether the differences between varieties were statistically significant. Including this information would enhance the rigor of the abstract. 4. The phrase "sun-dried and milled into flour for analysis" could be more precise. 5. The term "appropriate biochemical techniques" is vague. More specificity is needed in the methodologies described, particularly for the anti-nutritional factor analysis. 6. The term "adopted varieties" is used once but is not clearly explained. It would be clearer to briefly define what is meant by "adopted varieties" in contrast to "local varieties." 7. The abstract provides specific numerical data for WAC (2.532 g/g) and mentions that D-Pawa 2 had the highest seed weight, but there are no actual values given for seed weight. Including the most important numerical data would give a more complete picture of the results. INTRODUCTION: 1. The introduction could emphasis more on the specific challenges Ethiopia faces regarding soybean production, particularly in terms of malnutrition and food security. 2. Could more detail be provided about the current state of soybean production in Ethiopia, specifically in the Somali region, to better frame the study's objectives? 3. Include recent references wherever necessary. 4. The presence of anti-nutritional compounds (e.g., phytates, tannins, trypsin inhibitors) is highlighted as a critical issue. Could more detail be provided on how these compounds specifically impact nutritional quality in practical terms, and are there known strategies to mitigate their effects? 5. What was the rationale for selecting the specific soybean varieties used in this study? MATERIALS AND METHODS: 1. The study focuses on two research centers in Ethiopia's Somali region. Why these two centers were chosen? 2. Were there any quality control measures applied during the seed cleaning process, particularly to ensure that no damaged or infested seeds were used? 3. What was the rationale behind sun-drying the seeds for 8 hours? Did you try any alternative drying methods (e.g., oven drying)?	

	4. Were the airtight polyethylene bags used for storage able to completely prevent moisture or air exchange over the storage period? 5. Were there any preliminary tests or checks performed to ensure the seeds or flour remained stable during storage at 4°C? 6. The seed weight was calculated based on a sample of 100 seeds. Was this sample size statistically sufficient to represent the entire batch of each variety? Could variability in seed size within the same variety affect the results? 7. Why was a drop height of 30 cm chosen for measuring bulk density? Was this height based on a standard method, and how might different drop heights affect the results? 8. The term "WAC" appears twice in the text, once under "Oil Absorption Capacity." It should be corrected to "OAC". 9. Why was 3% trichloroacetic acid (TCA) used for extracting phytic acid? Could other solvents or concentrations yield different results? 10. Were any other anti-nutritional factors (e.g., trypsin inhibitors, saponins) considered in the study, and if not, why were tannins and phytates prioritized? RESULTS AND DISCUSSIONS: 1. How do you account for the significant variation in seed weight and bulk density across different soybean varieties? 2. Can you provide more information on the environmental factors that may have contributed to the differences observed in bulk density, particularly between the local and adopted varieties? 3. Did you conduct any additional tests (e.g., soil quality analysis) to correlate environmental conditions with the physical properties of the soybean varieties? 4. The study reports significant differences in WAC and OAC across varieties. Could you explain why some varieties, like K-Gizo, showed higher WAC while others like K-Pawa 2 showed lower values? Were there any differences in protein content, particle size, or processing methods that might explain this? 5. Since the oil absorption capacities did not differ significantly, could you clarify how this result aligns with previous studies? Could other functional properties have been affected by environmental or genetic factors? 6. Did you analyze the influence of protein composition, starch structure, or fiber content on the functional properties of the soybean varieties? 7. The local varieties exhibited higher levels of tannins and phytates. Were any specific post-harvest processing methods used to reduce these anti-nutritional factors? 8. Could you elaborate on why the coefficient of variation (CV) for water absorption capacity was relatively high (15.7%)? 9. Did you evaluate the impact of processing methods, such as roasting or fermentation, on the functional properties and anti-nutritional factors of the soybeans? How might these techniques further enhance the usability of the varieties with higher anti-nutritional factor content? CONCLUSION: 1. The conclusion summarizes the findings well but could benefit from more specific statements regarding how these properties (physical, functional, and anti-nutritional) directly relate to practical applications in food production and nutrition. What specific applications do the results suggest? 2. While the mention of proper processing techniques is important, the conclusion could be strengthened by providing specific examples of these techniques (e.g., fermentation, soaking, or cooking methods) and how they can effectively reduce anti-nutritional factors in local varieties. 3. The conclusion does not indicate any future research directions or areas that require further investigation. Identifying gaps in the current study or suggesting avenues for subsequent research would provide a more comprehensive conclusion and encourage continued exploration in this area. 4. The conclusion summarizes key findings but does not include any quantitative insights or results, such as specific values for seed weight or absorption capacities. Including these numerical data points could help reinforce the significance of the findings and provide a more robust conclusion. 5. The phrase "minimizing anti-nutritional factors" could be rephrased to "reducing the impact of anti-nutritional factors" for better clarity, as complete elimination may not be feasible. Overall, this research contributes valuable insights into the cultivation of soybeans in Ethiopia, addressing issues of malnutrition and food security, but could benefit from more detailed recommendations for specific applications and future research directions. The study is well-structured,	

	and the methodology is appropriately aligned with the research objectives, making it a significant addition to the existing literature on soybean properties. The manuscript can be accepted after making the above corrections.	

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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