

### Review Form 3

Journal Name:	<b>Journal of Scientific Research and Reports</b>
Manuscript Number:	<b>Ms_JSRR_123056</b>
Title of the Manuscript:	<b>Crop diversification with pulses for enhancing soil nutrient dynamics in conservation agriculture</b>
Type of the Article	<b>Review Article</b>

#### **General guidelines for the 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 guidelines for the Peer Review process, reviewers are requested to visit this link:

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#### **PART 1: Review Comments**

<b>Compulsory</b> REVISION comments	Reviewer's comment	Author's Feedback <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
<b>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.</b>	This manuscript is of significant importance to the scientific community, particularly in the fields of sustainable agriculture and environmental conservation. By focusing on the integration of pulses into conservation agriculture, the manuscript addresses pressing issues related to soil health, nutrient management, and sustainable cropping systems. The innovative approach of diversifying traditional cereal-based systems with pulses could offer viable solutions to the challenges of declining soil fertility and environmental degradation. I appreciate this manuscript for its comprehensive analysis and practical implications, which have the potential to influence future agricultural practices and policies in the Indo-Gangetic Plains and beyond.	
<b>Is the title of the article suitable? (If not please suggest an alternative title)</b>	The title of the article, "Crop Diversification with Pulses for Enhancing Soil Nutrient Dynamics in Conservation Agriculture," is generally suitable as it clearly conveys the focus on the role of pulses in improving soil nutrient dynamics within the context of conservation agriculture. However, it could be made more specific to emphasize the geographic relevance and the broader benefits discussed in the manuscript.  <b>A possible alternative title could be:</b> "Integrating Pulses into Conservation Agriculture for Sustainable Soil Health and Productivity in the Indo-Gangetic Plains." This title highlights the integration aspect, the focus on sustainability, and the specific region where the research is most applicable.	

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<p><b>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.</b></p>	<p>The abstract of the article is comprehensive, providing a clear overview of the key issues, proposed solutions, and the potential benefits of integrating pulses into conservation agriculture. It effectively highlights the problem of soil degradation due to continuous cereal cultivation in the Indo-Gangetic Plains (IGPs) and presents the diversification with pulses as a viable strategy to enhance soil fertility, reduce input costs, and promote sustainable agricultural practices.</p> <p>However, there are a few areas where the abstract could be improved for clarity and completeness:</p> <ol style="list-style-type: none"><li>1. Emphasize the Broader Impact: While the abstract mentions the benefits to soil health and nutrient cycling, it could also briefly touch on the broader implications for food security and climate change mitigation, which are discussed in the manuscript.</li><li>2. Include Quantitative Data: If space allows, including specific figures, such as the projected increase in land area for pulse cultivation or the reduction in nitrogen fertilizer use, could strengthen the abstract by providing concrete evidence of the benefits.</li><li>3. Clarify the Scope: The abstract could more explicitly mention that the focus is on the Indo-Gangetic Plains, as this regional context is critical to the study.</li></ol> <p><b>Suggested Revision:</b> Current Abstract: "Cultivating rice and wheat continuously in the Indo-Gangetic plains (IGPs) has led to soil and environmental issues. Diversifying cropping systems with pulses is vital for sustainable resource use efficiency. Utilizing extensive rice fallow regions for pulse cultivation could expand by 1.0 M ha in the IGPs. Integration of pulses enhances soil fertility water productivity and reduces input costs diseases and pests while their nitrogen-fixing ability and nutrient-rich residues contribute to soil health and nutrient cycling. This review emphasizes the importance of integrating pulses in conservation agriculture focusing on nitrogen economy nutrient recycling and the broader benefits of pulse crops for sustainable agricultural practices."</p> <p><b>Revised Abstract:</b> "Continuous cultivation of rice and wheat in the Indo-Gangetic Plains (IGPs) has resulted in significant soil degradation and environmental challenges. Diversifying cropping systems with pulses offers a sustainable solution, enhancing soil fertility, improving water productivity, and reducing input costs, including fertilizers and pesticides. This review highlights the potential to utilize extensive rice fallow regions, potentially expanding pulse cultivation by 1.0 M ha in the IGPs. Pulses' nitrogen-fixing ability and nutrient-rich residues play a crucial role in improving soil health, nutrient cycling, and carbon sequestration, contributing to food security and climate resilience. The integration of pulses into conservation agriculture practices is essential for achieving sustainable agricultural intensification in this critical region."</p> <p>This revised abstract provides a more detailed and balanced summary, emphasizing the regional focus and the broader implications of the research.</p>	
<p><b>Are subsections and structure of the manuscript appropriate?</b></p>	<p>The manuscript appears to be well-structured, with clear subsections that effectively organize the content and guide the reader through the discussion. The key components, such as the introduction, integration of pulses in conservation agriculture, and the various benefits of pulses (e.g., soil health, nutrient recycling, water use efficiency), are logically arranged, making it easy to follow the progression of ideas.</p> <p>However, to ensure the structure is optimal, here are a few suggestions:</p> <ol style="list-style-type: none"><li>1. Subsection Consistency: Ensure that all subsections are consistently formatted and titled. For instance, if some subsections delve into specific benefits (e.g., "Enhancing Soil Health through Pulse Cultivation"), others should follow a similar pattern (e.g., "Nutrient Recycling Capacity of Pulses").</li><li>2. Addition of a "Discussion" Section: If not already included, a "Discussion" section could be added after presenting the data and review of literature. This section could synthesize the information, compare it with existing research, and highlight the implications and potential challenges of</li></ol>	

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	<p>implementing pulse integration in conservation agriculture.</p> <p>3. Highlighting Practical Applications: A subsection dedicated to "Practical Applications and Recommendations" could be beneficial. This would summarize actionable insights and recommendations for farmers, policymakers, and researchers, based on the review.</p> <p>4. Regional Focus: Since the manuscript has a regional focus on the Indo-Gangetic Plains, a separate subsection titled "Regional Implications for the Indo-Gangetic Plains" could consolidate the region-specific data and recommendations.</p> <p>5. Conclusion: Ensure that the "Conclusion" section is distinct and provides a concise summary of the findings, along with future directions for research and policy.</p> <p>Suggested Structure:</p> <ul style="list-style-type: none"> <li>- Abstract</li> <li>- Introduction</li> <li>- Current Challenges in the Indo-Gangetic Plains</li> <li>- Integration of Pulses in Conservation Agriculture</li> <li>- Enhancing Soil Health</li> <li>- Nutrient Recycling Capacity</li> <li>- Water Use Efficiency</li> <li>- Regional Implications for the Indo-Gangetic Plains</li> <li>- Practical Applications and Recommendations</li> <li>- Discussion</li> <li>- Conclusion</li> <li>- References</li> </ul> <p>This structure would ensure a logical flow from identifying the problem, proposing a solution, and discussing its implementation and implications, which can make the manuscript more impactful and easier to navigate for the reader.</p>	
<p><b>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.</b></p>	<p>This manuscript is scientifically robust and technically sound due to its comprehensive review of current research and its reliance on well-established principles of conservation agriculture and agroecology. The authors have meticulously cited relevant studies, ensuring that the conclusions drawn are supported by empirical data and established knowledge. The manuscript effectively integrates various aspects of soil science, crop management, and environmental sustainability, demonstrating a deep understanding of the subject matter. Additionally, the proposed solutions, such as the integration of pulses into cereal-based cropping systems, are grounded in practical applications, making the research both theoretically and practically relevant.</p>	
<p><b>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.</b></p> <p>⋮</p>	<p>The references in the manuscript appear to be comprehensive and cover a wide range of relevant topics, including conservation agriculture, soil health, nutrient management, and the role of pulses in sustainable agriculture. The inclusion of various studies and reports indicates that the authors have thoroughly researched the subject matter.</p> <p>However, a few observations and suggestions can be made regarding the references:</p> <ol style="list-style-type: none"> <li>1. Recency of References: While many references are recent, some are older, dating back more than a decade. Ensuring that the majority of references are from the last five to ten years would enhance the manuscript's relevance, given the rapid advancements in agricultural research.</li> <li>2. Inclusion of More Recent Studies: If possible, the manuscript could benefit from including more recent studies, particularly those published in the last two to three years, that focus on the latest innovations in pulse integration, conservation agriculture, and climate-smart agricultural practices.</li> <li>3. Additional References: <ul style="list-style-type: none"> <li>- On Conservation Agriculture: Recent meta-analyses or reviews on the global impact of conservation agriculture could strengthen the manuscript's claims. For example, papers like "Conservation Agriculture: Global Prospects and Challenges" (Jat et al., 2020) or "Conservation Agriculture for Climate Resilience" (Kassam et al., 2019) could be included.</li> </ul> </li> </ol>	

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	<p>- On Pulses and Soil Health: Recent studies on the role of pulses in improving soil microbiomes and carbon sequestration, such as those published in journals like *Frontiers in Plant Science* or *Agriculture, Ecosystems &amp; Environment*, would add depth to the discussion on soil health benefits.</p> <p><b>Suggested Additional References:</b></p> <ul style="list-style-type: none"><li>- Jat, R. A., Wani, S. P., &amp; Sahrawat, K. L. (2020). Conservation agriculture in the semi-arid tropics: Prospects and challenges. *Advances in Agronomy*, 157, 1-67.</li><li>- Kassam, A., Friedrich, T., Derpsch, R., &amp; Kienzle, J. (2019). Overview of the Worldwide Spread of Conservation Agriculture. *Field Crops Research*, 228, 10-18.</li><li>- Chivenge, P., Mabhaudhi, T., Modi, A. T., &amp; Mafongoya, P. (2015). The Potential Role of Legumes in Soil Carbon Sequestration in Sub-Saharan Africa. *Plant and Soil*, 390(1-2), 113-129.</li></ul> <p><b>Incorporating these or similar references would ensure that the manuscript reflects the most current scientific understanding and trends in the field.</b></p>	
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<p>Minor REVISION comments</p> <p><b>Is the language/English quality of the article suitable for scholarly communications?</b></p>	<p>The language and English quality of the article are generally suitable for scholarly communication. The manuscript uses appropriate academic terminology and presents complex ideas clearly and concisely, which is essential for effectively conveying research findings to the scientific community. Overall, while the manuscript is already of high quality, careful editing for grammar, punctuation, and sentence structure would further enhance its suitability for scholarly communication.</p>	
<p><b>Optional/General</b> comments</p>	<p>Overall, this manuscript provides a comprehensive and insightful analysis of integrating pulses into conservation agriculture within the Indo-Gangetic Plains. The topic is highly relevant, addressing critical issues of soil degradation, nutrient management, and sustainable farming practices. The authors have effectively synthesized existing research, highlighting the multifaceted benefits of pulse cultivation, including enhanced soil fertility, improved water use efficiency, and reduced dependency on chemical inputs.</p> <p>One of the manuscript's strengths is its clear focus on the regional context of the Indo-Gangetic Plains, which adds specificity and practical relevance to the discussion. The inclusion of quantitative data, such as the potential expansion of pulse cultivation by 1.0 M ha, provides concrete evidence supporting the proposed strategies. Additionally, the manuscript's structure is logical and well-organized, facilitating easy navigation through the various sections.</p> <p>However, to further enhance the manuscript, the authors might consider the following suggestions:</p> <ol style="list-style-type: none"> <li>1. Inclusion of Case Studies: Incorporating real-world case studies or examples of successful pulse integration in similar agro-ecosystems could provide practical insights and strengthen the applicability of the recommendations.</li> <li>2. Visual Enhancements: Adding figures, tables, or diagrams that illustrate key concepts, such as nutrient cycling or crop rotation benefits, would improve the manuscript's readability and help convey complex information more effectively.</li> <li>3. Addressing Potential Challenges: Discussing potential barriers to pulse integration, such as market demand, farmer adoption rates, or infrastructural limitations, and proposing solutions to these challenges would provide a more balanced and comprehensive perspective.</li> <li>4. Future Research Directions: Outlining specific areas for future research could guide subsequent studies and highlight gaps that need to be addressed to optimize pulse-based conservation agriculture systems.</li> <li>5. Language Refinement: While the manuscript is generally well-written, a thorough proofreading to eliminate minor grammatical errors and enhance sentence clarity would further polish the presentation.</li> </ol> <p>In conclusion, this manuscript makes a significant contribution to the field of sustainable agriculture by elucidating the role of pulses in enhancing soil nutrient dynamics and promoting conservation agriculture. With the incorporation of the suggested enhancements, the manuscript has the potential to serve as a valuable resource for researchers, policymakers, and practitioners aiming to implement sustainable farming practices in the Indo-Gangetic Plains and similar regions.</p> <p>There do not appear to be any ethical issues in this manuscript. The research is focused on agricultural practices, specifically the integration of pulses into conservation agriculture, which typically does not involve human or animal subjects, personal data, or other sensitive ethical considerations. The manuscript seems to adhere to standard academic practices, including appropriate citation of sources and a clear presentation of findings.</p> <p>However, it's always good to ensure that:</p> <ol style="list-style-type: none"> <li>1. Data Integrity: Any data presented or referenced is accurate, properly sourced, and has been used ethically.</li> <li>2. Environmental Considerations: If discussing agricultural practices, it's important to consider and address any potential environmental impacts that could arise from the recommendations.</li> </ol> <p>Assuming these aspects are well-handled, there should be no ethical concerns with the manuscript.</p>	

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**PART 2:**

	<b>Reviewer's comment</b>	<b>Author's comment</b> <i>(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)</i>
<b>Are there ethical issues in this manuscript?</b>	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

**Reviewer Details:**

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