Review Form 1.7

Journal Name:	**Asian Journal of Soil Science and Plant Nutrition**
Manuscript Number:	**Ms_AJSSPN_117039**
Title of the Manuscript:	**Implications of various tillage, residue, and nitrogen management practices on crop yield and soil biology of an Inceptisol under maize-wheat cropping system**
Type of the Article	**Original Research Article**

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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 **1. Is the manuscript important for scientific community?** (Please write few sentences on this manuscript) **2. Is the title of the article suitable?** (If not please suggest an alternative title) **3. Is the abstract of the article comprehensive?**	Certainly! Let's delve into the implications of different agricultural practices on crop yield and soil health. While the specific study you mentioned focuses on a rice-lentil cropping system, I will provide some general insights based on related research. Minimum Tillage vs. Conventional Tillage: Conventional Tillage (CT): This method involves ploughing the soil to prepare it for planting. While it can initially lead to higher crop yields due to better soil aeration and weed control, it can also cause soil degradation over time. Minimum Tillage (MT): MT reduces soil disturbance by minimizing ploughing or tilling. It helps maintain soil structure, prevents erosion, and enhances soil health. Integrated Nutrient Management: Combining organic and inorganic fertilizers can enhance nutrient availability for crops. Some common practices include: FYM (Farm Yard Manure): Adding organic matter to the soil improves soil structure, water retention, and nutrient cycling. Biofertilizers (e.g., Azospirillum): These beneficial microorganisms fix atmospheric nitrogen, making it available to plants. Zinc Sulphate: Zinc is essential for plant growth and development. Integrated nutrient management aims to optimize nutrient use efficiency while minimizing environmental impact. Effects on Crop Yield and Soil Health: In the rice-lentil cropping system, MT combined with integrated nutrient management showed promising results in terms of yield and soil health. During the second year of the study, MT treatments outperformed CT in terms of leaf area index (LAI), crop growth rate (CGR), and yield. The benefits of MT include reduced soil compaction, improved water infiltration, and better nutrient availability. These factors contribute to sustainable crop production. Considerations for Other Cropping Systems: While the study focused on rice-lentil, similar principles apply to other cropping systems (e.g., maize-wheat). Farmers should adopt practices based on local conditions, soil type, and crop requirements. Regular soil testing and monitoring are essential to fine-tune nutrient management strategies. In summary, adopting minimum tillage practices and integrating nutrient management can enhance crop yield and maintain soil health. **Enhancing Crop Yield and Soil Health: Insights from Tillage and Nutrient Management Practices** Some potential objections to the abstract: **Lack of Specifics**: While the abstract mentions "various tillage, residues, and nitrogen management practices," it does not provide specific details about the treatments used. Readers might want to know the exact tillage methods (e.g., ploughing depth, frequency) and the types of residues (crop-specific) considered. Additionally, the nitrogen management practices are described as percentages of the recommended dose (RDN), but the actual RDN value is not specified. **Soil Sampling Frequency and Depth**: The abstract states that soil samples were collected at various stages of both maize and wheat growth, but it does not specify the frequency (e.g., monthly, annually) or the total number of sampling events. The depth intervals (0-5 cm, 5-15 cm, and 15-30 cm) are mentioned, but the rationale behind these specific depths is not explained.	

4. Are subsections and structure of the manuscript appropriate? **5. Do you think the manuscript is scientifically correct?** **6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.** **(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)**	**Missing Context on Enzyme Activities and Glomalin**: The abstract briefly mentions enzyme activities (dehydrogenase, acid, and alkaline phosphatase) and glomalin content. However, it does not elaborate on their significance or how they relate to soil health. Readers might want more context on why these specific soil properties were chosen for assessment. **Crop-Specific Results**: The abstract provides overall biomass yield percentages for maize and wheat, but it does not specify whether these results were consistent across both crops. It would be helpful to know if certain practices had a differential impact on maize versus wheat yields. **Practical Implications and Recommendations**: While the conclusion suggests adopting specific practices (no-tillage with residue mulch and 150% RDN), it does not explain why these combinations are recommended. Readers might seek practical guidance on implementing these findings in real-world farming scenarios. In summary, while the abstract outlines the study's main components, addressing these objections would enhance its clarity and applicability. **They should be set according to the guidelines of journal authors.** 1. **Study Design and Methodology**: ○ The study followed a split-split plot design, which is commonly used in agricultural research to assess multiple factors simultaneously. ○ Soil samples were collected at different depths during both maize and wheat growth stages, allowing for a comprehensive analysis of soil properties. 2. **Key Findings**: ○ The results indicate that no-tillage practices combined with residue treatment led to higher soil organic carbon (SOC), enzyme activities, microbial biomass carbon and phosphorus, and glomalin content. ○ Nitrogen application (specifically 150% RDN) positively influenced biomass yield in both maize and wheat. 3. **Recommendations**: ○ The conclusion suggests that farmers can adopt no-tillage practices with 5 t/ha crop residue mulch and 150% RDN to improve soil health and achieve higher biomass yield. 4. **Limitations**: ○ The abstract does not mention potential limitations of the study, such as external factors (climate, pests, diseases) that may impact results. ○ It is essential to consider the specific context (location, soil type, climate) when interpreting the findings. The references cover various aspects related to soil management, nutrient practices, and crop yield. However, for a more comprehensive review, It recommends exploring additional recent studies specifically related to maize-wheat cropping systems. **The article should be reviewed and rewritten in terms of writing.**	
Minor REVISION comments **1. Is language/English quality of the article suitable for scholarly communications?**	It needs severe revision and correction. Inconsistent spelling: The author (s) used North American and Indian spellings in your document. Both variants are acceptable, but it is best to be consistent.	

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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)*	

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