

Response to Reviewer 2 Comments

Dear reviewer:

Thanks for your letter and for reviewer's comments concern our manuscript entitled “Interaction regulation mechanism of soil organic carbon fraction and greenhouse gases by organic and inorganic fertilization” (Manuscript ID: agronomy-3828262). We are very grateful to the reviewers for their valuable comments and suggestions on our article, which has been of great help in our manuscript revision. The reviewer comments are laid out below in italicized font and specific concerns have been numbered. Our response is given in normal font and changes/additions to the manuscript are given in the yellow text.

Point-by-point response to Comments and Suggestions for Authors:

Comment 1:

Keywords. I suggest using terms that are not part of the title, as it is best practice in scientific writing for keywords. The current section reuses words that already appear in the title; selecting distinct keywords will improve indexing and readability.

Response 1:

Thank you very much for your suggestion. Your suggestion is entirely reasonable. We have reorganized the keywords according to your suggestion, ensuring that they are consistent with the central meaning of the text and avoiding repetition with the title. We have revised the keywords to the following five:

Fertilizer substitution ratio; Soil organic carbon fractions; Carbon pool management index (CPMI); Greenhouse gas emissions; Organic-inorganic fertilizer synergy

Comment 2:

Introduction. The introduction addresses several topics—fertilization, soil carbon, residues from leafy vegetables, greenhouse gas emissions, and CPMI (define the acronym when first used)—without a clear thread or an explicit research question. While it cites literature on fertilization, soil carbon, and emissions, the knowledge gaps that the study aims to fill are not clearly articulated. I recommend: (1) clearly stating the research question or hypotheses; (2) explicitly identifying the concrete gaps in knowledge these questions address; and (3) clarifying why the study is important for indoor horticulture soil management and for achieving lower emissions. Emphasizing these gaps will provide a stronger rationale and guide the reader through the study's significance.

The introduction consists of two very long paragraphs, which hinder comprehension. Similarly, there are paragraphs that are overly lengthy and not conducive to this type of scientific article. I recommend using sentences that specify the results and, when possible,

dividing long paragraphs into shorter sections.

There are several problems of redundancy and lack of coherence. I suggest reworking the introduction to move from the general context of the research to the specific aspects, highlighting the state of the art on the topic, the novelty, and the problem to be solved.

Response 2:

Thank you for your valuable comments! We have systematically restructured the introduction section based on your suggestions, with the following key improvements:

Clearly stated research questions, objectives, and hypotheses: We have transformed the implicit research objectives in the original text into specific research questions and hypotheses, highlighting the research motivation and innovative points.

Rearranged and simplified the content structure to enhance logical coherence: We have broken down and summarized the original lengthy paragraphs, streamlined the narrative sequence of “background—problem—method—objective—significance,” and removed repetitive and distracting content.

Unified terminology and expressions, refined sentences: standardized the use of professional terminology, simplified lengthy sentences, merged similar literature citations, and improved the accuracy and readability of academic expression.

Thank you for your feedback, which has significantly enhanced the professional expression of our introduction section.

Comment 3:

Materials and Methods. In the Materials and Methods section, there is, in general, redundancy and a lack of clarity in the methods. In addition, there are repetitions in the description of the organic fertilizer and its composition, which is repeated several times. I suggest describing the fertilizer once in the text.

Response 3:

Thank you for your valuable comments on the “Materials and Methods” section. We fully agree with your observations regarding the redundancy and lack of clarity in the methods section, as well as the repetitive descriptions of organic fertilizers and their components. As you correctly pointed out, this repetition was also noted by the first reviewer.

To address these issues, we have revised this section to ensure that the description of the fertilizer appears only once, is clear and concise, and all redundant information has been removed. The modifications we have made are highlighted in green text rather than yellow for your reference (Line 96-123).

Comment 4:

Experimental design. Although a multifactorial block design with six treatments is stated,

several critical details are missing. The size of the blocks and the number of plots per treatment within each replication should be described. Reference should be made to the randomization of plots and the method of treatment assignment. In addition, the total number of plots and their arrangement (experimental layout, blocks, etc.) should be described. I recommend including a diagram or table that outlines the experimental design, the total size of the experiment, and the randomization method.

Response 4:

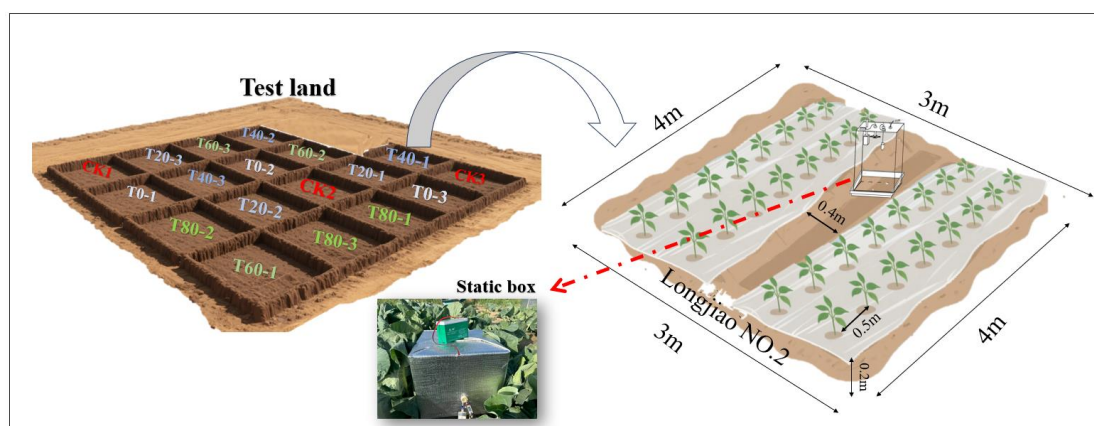
In response to your suggestions, we have added a schematic diagram of the experimental plots to facilitate a clearer understanding for readers. Regarding the specific details you mentioned:

The size of the blocks is specified in line 116 of the original text.

The number of plots per treatment within each replication, which is 3 times for each treatment, can be found in line 101.

As for the randomization of plots and the method of treatment assignment, as well as the total number of plots (18 in total) and their arrangement, these aspects were indeed described in the original manuscript, though perhaps not as prominently as they should have been. We have now revised the relevant sections to make these details more explicit and easier to locate.

We hope these revisions adequately address your concerns and improve the overall quality and readability of our manuscript. Thank you again for your valuable input, which has been instrumental in refining our work.



Comment 5:

In soil management, the description of fertilizer composition is repeated again, and the substitution between chemical and organic fertilizers remains unclear, as it does not specify which specific nutrients were substituted in each treatment beyond the general ratio. If you keep this structure, I suggest presenting a clear table with the exact amounts of N, P_2O_5 , and K_2O supplied by each treatment, as well as the source of each nutrient and the date of each application. It should be specified whether the total N, P, and K input was constant across

treatments.

Response 5:

Thank you for your valuable feedback, which has prompted us to further clarify the rationale behind our fertilizer application strategy. We appreciate your attention to detail, which has prompted us to strengthen our explanation of the experimental design.

Regarding fertilizer application rates, we initially determined the application rates based on the actual experience of local farmers to ensure relevance to actual agricultural practices. For the T20–T80 treatment groups, the application rate of organic fertilizer was standardized relative to the nitrogen (N) content of the T0 control group. We need to clarify that the organic fertilizer we used contains a fixed ratio of nitrogen, phosphorus (P), and potassium (K), making it impossible to independently adjust the application rate of a single nutrient.

Given this limitation, we prioritized ensuring consistent total nutrient input across treatment groups by using nitrogen (N) as the primary reference point. The reasons for selecting this method include:

- It ensures consistent nitrogen supply, a critical factor for crop growth;
- Due to the proportional relationship between nitrogen and potassium in the fertilizer, potassium (K) levels are nearly balanced;
- Although there are minor differences in phosphorus (P) levels, these differences are relatively small given the scale of the experimental plots and do not affect the effectiveness of overall nutrient balance.

We acknowledge that this method does not achieve perfect balance of all nutrients, but under experimental conditions, it is the most feasible and agronomically sound approach. To enhance transparency, we have included supplementary calculation tables below and calculated the fertilizer application rates within the plots.

At the same time, since reviewer 1 raised the same opinion, we marked the revisions with a green background in the revised draft.

Table 2				(3.0% N, 2.10 %P ₂ O ₅ , 1.07%K ₂ O)				0.0012			
Treatment	Fertilizer			TN, TP, TK application rates				(chemical fertilizer application rate + organic fertilizer conversion to N, P, K content)			
	N	P ₂ O ₅	K ₂ O	1ha				12m ²			
	(kg·hm ⁻²)	(kg·hm ⁻²)	(kg·hm ⁻²)	Content per hectare				Neighborhood content			
CK	0	0	0	CK	0	0	0	CK	0	0	0
T0	277.33	487.17	142.42	T0	277.33	487.17	142.42	T0	0.332796	0.584604	0.170904
T20	221.87	389.73	113.93	T20	277.33	429.98007	146.51339	T20	0.332796	0.515976084	0.175816
T40	166.4	292.3	85.45	T40	277.33	369.82507	148.20839	T40	0.332796	0.443790084	0.17785
T60	110.93	194.87	56.97	T60	277.33	311.24507	151.17839	T60	0.332796	0.373494084	0.181414
T80	55.47	97.43	28.48	T80	277.33	252.65507	154.13839	T80	0.332796	0.303186084	0.184966

Comment 6:

Sampling details are lacking in several areas:

- *Soil sampling depth for organic carbon (OC), microbial biomass carbon (MBC), dissolved organic carbon (DOC), easily oxidizable carbon (EOC), particulate organic carbon (POC), and mineral-associated organic carbon (MAOC).*
- *Soil sampling methods (number of pits per plot, composite sampling).*
- *Sampling frequency and sampling times throughout the crop cycle.*
- *Plant sampling (if plant-dependent parameters were measured; sample size).*

In this section, specify depths (e.g., 0–20 cm, 20–40 cm), the number of replications per plot, the sampling protocol, and the sampling schedule.

Response 6:

We sincerely appreciate your valuable comments and detailed suggestions regarding the sampling details. We are deeply grateful for your efforts, which have played an important role in improving the quality of our paper.

In response to your feedback, we would like to clarify the following points:

Soil sampling depth: The soil sampling depth for all parameters mentioned (organic carbon (SOC), microbial biomass carbon (MBC), dissolved organic carbon (DOC), easily oxidizable carbon (EOC), particulate organic carbon (POC), and mineral-associated organic carbon (MOC)) is uniformly set at 0–20 cm.

Soil sampling method: We conducted two soil samplings at each plot. Specifically, we used a five-point sampling method within each plot, followed by a quartering method to reduce the sample size to a representative composite sample.

Sampling frequency and timing: Soil samples were collected at four key crop growth stages: seedling stage, budding stage, flowering and fruit set stage, and fruit development stage. Within each stage, we conducted two samplings at one-week intervals to capture any temporal changes.

Plant Sampling: Currently, our research focuses solely on measuring final yield as a plant-dependent parameter, so we have not implemented detailed plant sampling protocols beyond yield measurement.

We have revised the relevant sections of the manuscript to more clearly incorporate these details, ensuring readers can easily access and understand our sampling procedures. Once again, thank you for your valuable feedback, which has made a significant contribution to improving our work.

Comment 7:

Analytical methods. I recommend greater brevity in the methods and citing specific references without detailing critical conditions (reagents, extraction conditions, times, temperatures, equipment).

At this stage, include key operational parameters for each method: solvents/reagents,

volumes, temperatures, extraction times, result normalization, and any calibration or quality-control procedures, while also referencing the specific sources.

Response 7:

We sincerely appreciate your insightful and valuable recommendations regarding the "Analytical methods" section. Your suggestion for greater brevity while ensuring the inclusion of key operational parameters is entirely reasonable and has significantly helped us refine our manuscript.

As per your guidance, in the revised version (lines 147 - 163), we have made the following improvements:

Brevity: We have carefully deleted unnecessary details that were previously included, such as some overly descriptive and non-essential steps, to streamline the methods section and make it more concise.

Key Parameters: We have retained and, in some cases, added crucial operational parameters for each analytical method.

Reference Citation: We have ensured that each method is properly referenced to specific sources, allowing readers to access more in-depth information if needed while keeping our manuscript focused on the essential aspects relevant to our study.

We believe these revisions have enhanced the clarity, readability, and scientific rigor of the "Analytical methods" section. Thank you again for taking the time to review our work and for providing such constructive feedback. We look forward to any further comments or suggestions you may have.

Comment 8:

Measurement of greenhouse gases. You describe weekly measurements with static chambers and GC, but the following aspects are not addressed:

Chamber size, air volume, sampling rate, and sample volume.

Method calibration.

GC calibration details (gas standards, precision, detection limit).

How temporal variability was handled (time of day, meteorological conditions) and whether temperature corrections were applied.

I suggest adding complete equipment specifications, calibration protocols, and quality-control procedures, and a sampling scheme for CH₄ and CO₂ (number of replicates per plot, handling of weather conditions).

Response 8:

Thank you very much for your review. Your comments are entirely correct. We have supplemented and highlighted the chamber construction, gas volume, and sampling specifications: explicitly providing the specific dimensions of the static chamber, gas volume, sampling frequency, and schedule, while emphasizing parallel sampling and operational

consistency.

We have refined the chromatographic analysis methods and detailed calibration/quality control procedures: expanded instrument configurations, calibration standard gas ranges, precision, detection limits, and flux calculation/correction methods. Additionally, we have included instructions for handling covariates such as repeat settings and weather conditions: specifying repetition counts, extreme weather response strategies, and data quality control measures. Revised version (lines 175-189).

Comment 9:

Calculations and formulas. Equations are presented but definitions of variables and units are missing. I suggest presenting equations with a clear list of symbols and units. Verify unit consistency throughout the manuscript and provide a calculation example to illustrate the procedure.

Response 9:

Thank you for your valuable feedback on the “Calculations and Formulas” section. We greatly appreciate your attention to detail and your efforts to ensure the manuscript's clarity and completeness.

Regarding the definition of variables and units, we clarify that these are explicitly stated in Section 2.4.1 of the manuscript. We understand that this information may have been overlooked due to its length, and we sincerely apologize for any inconvenience caused.

Regarding the suggestion to provide computational examples, given that the target audience consists of professionals proficient in such calculations, we believe adding examples would not significantly enhance comprehension and may instead result in an overly lengthy and cumbersome manuscript. For your convenience in reviewing, we have handwritten a sample calculation and included it below for your consideration.

Nevertheless, we fully recognize the importance of transparency and clarity in scientific communication. Should you believe computational examples are essential to understanding our methodology, we are open to reconsidering this position. If supplementation is deemed necessary, we will explore integrating relevant examples into existing sections without substantially increasing the manuscript length.

We thank you once again for your constructive feedback and look forward to your further comments and suggestions. We remain committed to ensuring our manuscripts meet the highest standards of scientific rigor and clarity of expression. For your convenience in reviewing, we have handwritten a sample calculation and included it below for your consideration.

$$Soc: ck: 9.009 kg \quad Eac: ck: 1.058 kg$$

$$T_0: 10.45 g/kg \quad T_0: 1.57 g/kg$$

$$L: L = \frac{O_{active}}{O_{inactive}}$$

$$L_{ck} = \frac{1.05}{9.00 - 1.05} = 0.101$$

$$L_{T_0} = \frac{1.57}{10.45 - 1.57} = 0.177$$

$$L1: L1 = \frac{L_{sample}}{L_{reference}}$$

$$L1_{ck} = \frac{0.101}{0.131} = 1.000$$

$$L1_{T_0} = \frac{0.177}{0.191} = 1.357$$

$$CPI: CPI = \frac{SOC_{sample}}{SOC_{reference}}$$

$$CPI_{ck} = \frac{9.00}{9.00} = 1.000$$

$$CPI_{T_0} = \frac{10.45}{9.00} = 1.161$$

$$CPMI: CPMI = CPI \times L1 \times 1000$$

$$CPMI_{ck} = 1.000 \times 1.000 \times 1000 = 1000.000$$

$$CPMI_{T_0} = 1.161 \times 1.357 \times 1000 = 1576.871$$

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$$CO_2: G_0 = 198.2653 \text{ mmol/mol} \quad CH_4: G_0 = 0.03 \text{ mmol/mol}$$

$$G_0 = 159.9978 \text{ mmol/mol} \quad G_0 = 0.00 \text{ mmol/mol}$$

$$T_0 = 273.15 K \quad T_0 = 273.15 K$$

$$T_1 = 273.15 K \quad T_1 = 273.15 K$$

$$T_2 = 273.15 K \quad T_2 = 273.15 K$$

$$H = 0.49 m \quad H = 0.49 m$$

$$\Delta t = 0.36 h \quad \Delta t = 0.36 h$$

$$M_C = 44 \quad M_C = 16$$

The CO_2 and CH_4 ggc emission fluxes are calculated as:

$$F = \frac{M_C}{22.4 \times 10^6} \times H \times 273 \times \left(\frac{G_0}{T_0} - \frac{G_1}{T_1} \right)$$

$$F_{CO_2} = \frac{44}{22.4 \times 10^6} \times 0.49 \times 273 \times \left(\frac{198.2653}{273} - \frac{159.9978}{273} \right) = 13.88 \text{ mg} \cdot m^{-2} \cdot h^{-1}$$

$$F_{CH_4} = \frac{16}{22.4 \times 10^6} \times 0.49 \times 273 \times \left(\frac{0.03}{273} - \frac{0.00}{273} \right) = 0.02 \text{ mg} \cdot m^{-2} \cdot h^{-1}$$

$$CO_2: F_N = 13.88 \text{ mg} \cdot m^{-2} \cdot h^{-1} \quad CH_4: F_N = 0.02 \text{ mg} \cdot m^{-2} \cdot h^{-1}$$

$$F_{N1} = 17.88 \text{ mg} \cdot m^{-2} \cdot h^{-1} \quad F_{N1} = 0.07 \text{ mg} \cdot m^{-2} \cdot h^{-1}$$

$$F_{N2} = 18.93 \text{ mg} \cdot m^{-2} \cdot h^{-1} \quad F_{N2} = 0.09 \text{ mg} \cdot m^{-2} \cdot h^{-1}$$

$$F_{N3} = 19.98 \text{ mg} \cdot m^{-2} \cdot h^{-1} \quad F_{N3} = 0.11 \text{ mg} \cdot m^{-2} \cdot h^{-1}$$

$$F_{N1} - F_N = 7.2$$

$$F_{N2} - F_N = 7.2$$

$$F_{N3} - F_N = 7.2$$

When N is equal to 1, the calculation formula for the cumulative emissions of soil CO_2 and CH_4 is:

$$M_1 = \sum [(F_{N1} + F_N) \times 0.5 \times (F_{N1} - F_N) \times 24 \times 10^3]$$

$$M_{CO_2} = [(13.88 + 17.88) \times 0.5 \times (17.88 - 13.88) \times 24 \times 10^3] + [(17.88 + 18.93) \times 0.5 \times (18.93 - 17.88) \times 24 \times 10^3] = 57.2653 \text{ kg} \cdot hm^{-2}$$

$$M_{CH_4} = [(0.02 + 0.07) \times 0.5 \times (0.07 - 0.02) \times 24 \times 10^3] + [(0.07 + 0.09) \times 0.5 \times (0.09 - 0.07) \times 24 \times 10^3] = 0.21 \text{ kg} \cdot hm^{-2}$$

$$GHIP = M_{CO_2} + 25 \times M_{CH_4}$$

$$GHIP = 57.2653 + 25 \times 0.21 = 62.5128$$

$$GHIP = \frac{62.5128}{1000} = 0.0625128$$

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Comment 10:

Statistical analysis. It is stated that Excel was used. If other statistical software was used, specify which ones and what analyses were performed, including the type of analysis for each case. Consider correcting for multiple comparisons if many tests are performed. Indicate whether standard errors or confidence intervals were reported.

Response 10:

Thank you for your valuable feedback on the statistical methods section. We have revised the “Data Analysis” section to provide a more comprehensive and precise description of the statistical software and procedures used in the study. The updated description is as follows:

Clarification of statistical tools and methodological details: The specific version number of R software is now listed, and additional details regarding the statistical methods employed (e.g., ANOVA, Tukey HSD test, Pearson correlation analysis) have been added.

Supplemented multiple comparison corrections and uncertainty representation: Clearly stated that Tukey HSD was used for multiple comparison corrections and indicated that data results are reported as “mean ± standard error (SE).”

Standardized and unified academic expression: Terminology and structure were standardized to ensure consistency with academic norms and international publication requirements.

Your suggestions have significantly enhanced the clarity and reproducibility of the methods description. Thank you again for your meticulous review.

Comment 11:

In Figure 1, there is no statistical analysis indicated in the figure caption. Additionally, the

abbreviations are not described, and the information is generally incomplete. I recommend including in the figure caption: statistical analysis, sample size used, and a definition of what each abbreviation in the figures represents.

Response 11:

Thank you for your insightful comments on Figure 1. We acknowledge that the figure caption indeed lacks information regarding statistical analysis, and we appreciate you bringing this to our attention.

Regarding the concern about the caption becoming overly lengthy if all the additional information is included, we have opted to add a note beneath the figure caption instead. This note will elaborate on the relevant details without cluttering the caption itself.

As for the abbreviations, taking into account the suggestions from both you and Reviewer 1, we have decided to define the abbreviated terms at their first occurrence in the article. This approach ensures clarity while maintaining a reasonable length for the text.

With regard to the sample size, we have already provided a detailed description in the "Materials and Methods" section. Specifically, for soil samples, we collected samples twice during each of the four growth stages. With six treatments and three replicates, this amounts to a total of $2 * 4 * 6 * 3 = 216$ samples. For gas samples, we collected samples every week throughout the entire growth period (on dates including 5.28, 6.04, 6.10, 6.18, 6.25, 7.04, 7.12, 7.19, 7.27, 8.05, 8.13, 8.21, 8.31, 9.06, 9.13, and 9.19). With six treatments and three replicates, this results in a total of $16 * 6 * 3 = 288$ samples.

We believe that these adjustments will enhance the comprehensibility and completeness of our manuscript. Thank you once again for your valuable feedback.

Comment 12:

For Figure 2, I suggest adding the sample size and detailing what each abbreviation in the figure means.

Response 12:

Thank you for your insightful comments on Figure 2. Our response to this comment aligns with our reply to Comment 11. To avoid redundant explanations that may tire your review, we will not elaborate further. We appreciate your thorough review.

Comment 13:

For Table 3, propose including the type of statistical analysis in the table caption. Also, the abbreviations are not described, and the information is generally incomplete. I recommend adding in the table caption: statistical analysis, sample size used, and a definition of each abbreviation used in the figures.

Response 13:

We sincerely appreciate your valuable suggestions on Table 3. Your point about including the type of statistical analysis in the table caption is indeed very reasonable.

Considering that adding all the required information directly in the caption might make it excessively long, we have chosen to incorporate the statistical methods and the way to express significance in the notes section below the table. This way, readers can still access the crucial information without the caption becoming overly cumbersome.

As for the issue of undescribed abbreviations and incomplete information regarding sample size, we follow the approach we adopted in response to comment 11. That is, we define the abbreviated terms at their first occurrence in the entire text to ensure clarity. Regarding sample size, we have already provided a detailed description in the "Materials and Methods" section to maintain consistency throughout the manuscript.

We believe these adjustments will effectively address your concerns and enhance the overall quality and clarity of our table presentation. Thank you again for your constructive feedback.

Comment 14:

Figure 3 should also include the sample size, definitions of all abbreviations used in the figures, and the statistical analysis employed. In the figure where GHGI is defined as the ratio of GWP to crop yield, more information is required to indicate whether statistical differences exist.

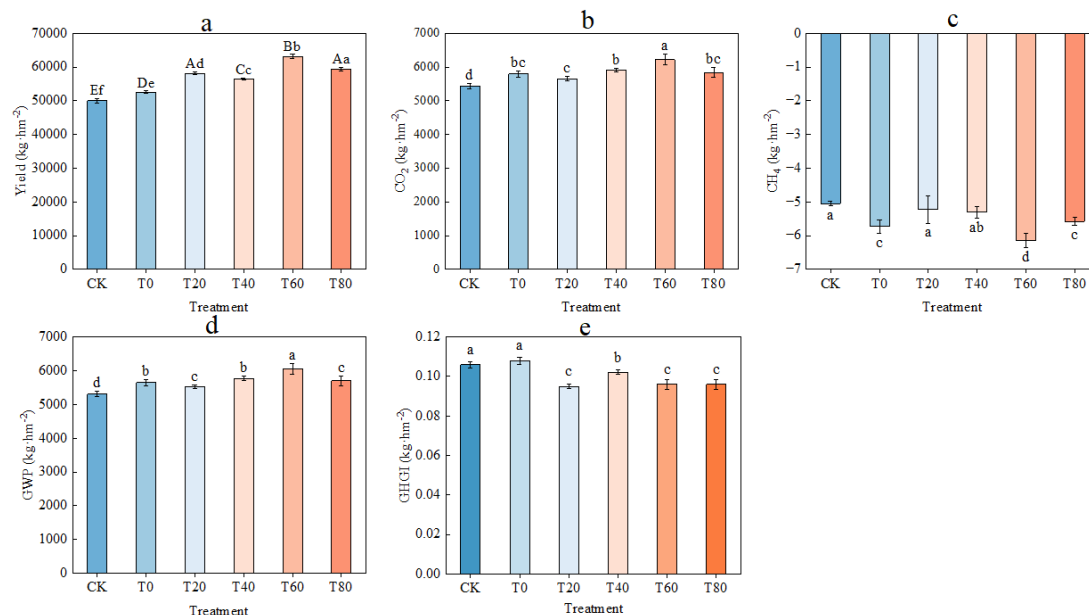
Response 14:

We greatly appreciate your valuable comments on Figure 3.

Regarding the sample size and the definitions of all abbreviations used in the figure, we have addressed them in accordance with our response to comment 11. As for the statistical analysis employed, we have included it in the notes section below the figure caption for ease of reference.

We admit that it was an oversight on our part not to indicate the statistical differences for GHGI (defined as the ratio of GWP to crop yield) in the original figure. Thanks to your reminder, we have now incorporated the statistical differences into Figure 3 in the revised manuscript. To facilitate your review, we have attached it below.

We once again express our gratitude for your meticulous review and constructive suggestions, which have been instrumental in improving the quality of our manuscript.



Comment 15:

The presentation of the results is in a single, very long paragraph, which makes it difficult to grasp the results. I suggest reworking the paragraphs and dividing them into several sections, organizing the results to improve comprehension. The subsections below indicate where these issues occur:

3.1 Effect of fertilization practices on soil total organic carbon and its fractions

3.2 Effect of fertilization practices on the proportion of soil organic carbon fractions

3.3 Effect of fertilization practices on soil carbon pool management indices

3.4 Effect of fertilization practices on yield and cumulative CH₄ and CO₂ emissions

3.5 Correlation analysis of soil organic carbon fractions and nutrients with cumulative CH₄ and CO₂ emissions

Response 15:

Thank you for your valuable feedback; your comments are entirely correct. We have revised the entire Chapter 4, specifically the results analysis section, in the revised manuscript as follows:

Structural Decomposition and Clarification: Lengthy paragraphs have been restructured into multiple thematic sections, each focusing on a specific organic carbon fraction to enhance coherence and readability.

Academic Expression and Data Logic Enhancement: We have streamlined and standardized the presentation style, emphasizing the comparative relationships and significance among different fertilization treatments, growth stages, and components to facilitate reader comprehension of the data results.

Standardization of Terminology and Comparative Relationships: We have unified professional terminology and the sequence of data presentation, clearly illustrating the differences and trends between various treatments, periods, and components.

We appreciate your professional review and hope our revisions meet your requirements.

Comment 16:

Discussion

The discussion is not clear, and there are grammatical errors. Relevant research references should be used. Avoid statements that depend on unverified studies or studies not accessible to readers.

The presentation of the discussion is in very long paragraphs, which makes it difficult to grasp the results. I recommend reworking the paragraphs and dividing them into several sections, organizing the discussion so that it is easier to follow. The subsections below indicate where these issues occur:

4.1 Effect of fertilization practices on soil total organic carbon and its fractions

4.2 Effect of fertilization practices on the proportion of soil organic carbon fractions

4.3 Effect of fertilization practices on soil carbon pool management indices

4.4 Effect of fertilization practices on yield and cumulative CH₄ and CO₂ emissions

4.5 Correlation analysis of soil organic carbon fractions and nutrients with cumulative CH₄ and CO₂ emissions

Response 16:

Your feedback is indeed spot-on, but we noticed that this section of the comment duplicates Comment 15. This may be an error in citation, though it does not affect our understanding.

We have carefully incorporated your suggestions and comprehensively revised the “Discussion” section as requested. The revisions encompass the following aspects:

First, we corrected grammatical errors to ensure more precise and fluent language.

Second, we incorporated relevant research literature to strengthen our arguments and provide a more solid theoretical foundation for our discussion. We ensured that only verifiable studies accessible to readers are cited, avoiding reliance on unverified or inaccessible sources.

Additionally, we restructured the presentation of the discussion section. Previously, lengthy paragraphs obscured key points; we have now divided the discussion into multiple, clearly organized subsections. This new structure enhances clarity and logical coherence, making our analysis and conclusions easier for readers to follow.

We believe these revisions significantly improve the quality and readability of the “Discussion” section. Thank you once again for your insightful comments—your valuable feedback has been crucial in refining our manuscript.

Other clarifications:

Again, thank you very much for your valuable comments and suggestions. We hope that the revisions in the manuscript and our accompanying responses will be sufficient to make our manuscript suitable for publication in Agronomy.