

## **Response to Anonymous Referee #1:**

**Comment:** This manuscript is very well written, and all required revisions have been made. The research is now ready for publication.

**Response:** Thank you again for your valuable comments on this study.

## **Response to Referee #2 Veloso Abel:**

**Comment:** After reading the revised manuscript and the authors responses, I consider that my previous comments have been adequately addressed. I am only leaving a few minor language-related remarks.

**Response:** Thank you for carefully reviewing the manuscript again. The manuscript has been revised according to your valuable comments.

**Comment:** L233 – “Although biochar improved soil available N, P, and K nutrients at the end of incubation (Fig. 5), however, its C (...) – The phrasing is a bit odd. Please verify.

**Response:** This sentence has been appropriately modified (Line 233).

**Manuscript text:** Biochar improved soil available N, P, and K nutrients at the end of incubation (Fig. 5), however, its C is mainly composed of stable aromatic C structures, which have strong chemical stability and are difficult to be decomposed and utilized by soil microorganisms, thus induced significant limitations in C utilization (Chen et al., 2024b).

**Comment:** L235 – “(...) C utilization, (Chen et al., 2024b)” – The comma before the reference should be removed.

**Response:** This comma has been removed now (Line 235).

**Manuscript text:** Biochar improved soil available N, P, and K nutrients at the end of incubation (Fig. 5), however, its C is mainly composed of stable aromatic C structures, which have strong chemical stability and are difficult to be decomposed and utilized by soil microorganisms, thus induced significant limitations in C utilization (Chen et al., 2024b).

**Comment:** L244 – The “g” in Glucosidase should be low-case.

**Response:** This error has been corrected (Line 244).

**Manuscript text:** This study selected  $\beta$ -glucosidase, urease and alkaline phosphatase as C-, N- and P-acquiring enzymes, respectively.