Response to Reviewer 2 Comments

First of all, the authors would like to express our heartfelt gratitude to reviewer 2 for his/her comments for improving the quality of this manuscript. Some specific responses under your comments are as follows:

**Point 1:** Line 10-23- Incomplete. Results showed that high ratios of biochar applied (30%, 40% and 50% and probably 20%) are clearly negatives for seedling's growth. Please, add this conclusion in Abstract as well as in Conclusion.

**Response 1:** We added the effect of the substrates with 40% and 50% biochar-treated on the seedling growth in line 18-19 (the new line number in the revised manuscript, the same below).

**Point 2:** Figure 1-Figure 6- Fit better in Suplementary Information. Not in the main article.

**Response 2:** According to your comment, we deleted Figure 1-Figure 6 in our revised manuscript, and used them as the supplementary information. We also added some explanations in line 427-430.

**Point 3:** Line 214- ‘Pervious’ should be changed to ‘Previous’.

**Response 3:** We changed ‘Pervious’ into ‘Previous’ in the whole text.

**Point 4:** Line 218- ‘common peat’ should be changed to ‘in common peat’.

**Response 4:** According to your comment, ‘common peat’ has been changed into ‘in common peat’ in line 215.

**Point 5:** Line 254- slope data missing

**Response 5:** We added the slope data in line 248.
Point 6: Line 261- Line 268- Very confuse. Please, explain better this paragraph.

Response 6: We are sorry to confuse you about the sentence, we have modified the paragraph to be ‘As shown in the enlarged part of Figure 1a (the new Figure number in the revised manuscript, the same below), the first substrate that dropped to 8 g was T5, and the last was T1, indicating that the substrate with T1 treatment had the best water retention in comparison with the substrates with other treatments. Besides, the substrate’s weight from the lightest to the heaviest on the 21st day was T0, T1, T2, T3, T4, T5 in sequence, which meant initial moisture content of peat was much better than biochar, so the content of biochar in the substrate was not the more the better. To sum up, adding a certain proportion of biochar in the substrate significantly increased the water retention of the substrate.’ in line 256-262.

Point 7: Line 269- This affirmation in incorrect. Only, ammonium is directly analyzed by Kjeldahl. Nitrate and organic nitrogen need to be transformed and/or digested.

Response 7: We are sorry that we brought the confusion to you because of the vague expression about the method which we measured the nitrogen. In order to determine the total nitrogen in the leaching liquid by the automatic Kjeldahl azotometer, the leaching liquid must be digested before determination. In a typical trial, we collected 25 mL leaching liquid into the centrifuge tube for total nitrogen determination after all the leaching liquid was collected and only 2 mL leaching liquid was needed to be digested according to standard digestion process. We used an inappropriate word ‘decocted’ in line 158 (in the first manuscript) to represent the process of leaching liquid digestion, so we changed the word ‘decocted’ into ‘digested’. Besides, we added some professional description to represent the whole process of total nitrogen determination in the revised manuscript in line 154-161.

Point 8: Line 275- The ‘nitrogen energy’ is bad expressed.

Response 8: We changed ‘nitrogen energy’ into ‘nitrogen’ in line 269.

Point 9: Line 282- The ‘Figure 10a’ should be changed to ‘Figure 8a’.

Response 9: According to your comment, we changed ‘Figure 10a’ into ‘Figure 2a’ in line 304.
**Point 10:** Line 316-Line 318- These results are as important as growth improvement by T1 treatment is. But in text authors only commented in a secondary way. Please remark in text this results.

**Response 10:** We are sorry that we omitted some discussions about the seedlings raised in the substrates with 40% and 50% biochar-treated in the first manuscript, so we added necessary discussions about the substrates with 40% and 50% biochar-treated inhibited the seedling growth in the revised manuscript. For example: line 18-19 in the abstract, line 277-280, line 332-334, line 349-352, line 418-419 and line 422-424 in the conclusion.

**Point 11:** Line 329-Line 331- Please, rewrite this paragraph in Figure 9a we observe length differences. Then these words (Figure 9a) are more appropriate in the second sentence.

**Response 11:** According to your comment, we changed the order of these two paragraphs, and we rewrote the paragraph to be ‘The total length of the root and the weight of root dry matters were two important parameters to judge root growth [33], so we selected these two parameters in order to better describe the effect of substrates with different biochar treatment to root systems. The root systems of the 19-day-old seedlings were washed carefully, and finally the roots were put on the paper after excess water of them was absorbed (Figure 3a). We found that the seedling raised in the substrate with T1 treatment got the strongest root system, and the root system of the seedlings raised in the substrate with T0 and T2 treatment were almost the same which were weaker than that of T1 treatment. However, the root system of the seedlings raised in the substrate with T4 and T5 treatment were the worst in comparison with that of other treatments’ in line 326-334.

**Point 12:** Line 337- Line 348- Include in Figures 9b and 9c statistical significance for all treatments and not only for T1. Probably T3, T4 and T5 showed differences statistically significant that are missing and that indicated the decrease in root growth when applying these biochar rates.

**Response 12:** We are sorry that we just marked the significance of T1 in Figures 3b and 3c (line 341), so we used significant letter marking method in single factor analysis of SPSS to remark the significance about all treatments, and the significance in Figure 2c and 2d (line 304)
was also remarked. Besides, we added some explanations about the effect of the substrates with 40% and 50% biochar-treated to enrich the discussion of our manuscript. ‘However, the weight of root dry matter raised in T_4 and T_5 treatment was the lightest in comparison with that of other treatments, especially on 19th day, which indicated that the substrates with 40% and 50% biochar-treated would inhibit the growth of seedling roots’ (in line 349-352).

**Point 13:** Line 406- Results showed that high ratios of biochar applied (30%, 40% and 50% and probably 20%) are clearly negatives for seedling's growth. Please, add this conclusion.

**Response 13:** According to your comment, we added the results about the growth of the seedlings raised in 40% and 50% biochar-treated in the Conclusion. ‘but the substrate would inhibit the growth of the seedlings with the increase of biochar proportion, especially when the biochar proportion reached 40% and 50%’ (line 418-419); ‘However, the compressive strength of the substrates with 40% and 50% biochar-treated were the worst in comparison with that of other treatments’ (line 422-424).

Finally, the authors are extremely grateful for the reviewer and his/her constructive and rigorous comments aimed at improving the quality of our manuscript.