

## Responses to reviewer 2

Dear reviewer:

We appreciate very much for your constructive suggestions and comments. The manuscript se-2014-87 “Changes in soil quality due to converting *Pinus* to *Eucalyptus* plantations and subsequent successive *Eucalyptus* planting in southern China” has been carefully revised in light of your comments and those of another reviewer. Our point-to-point responses to each of the comments and suggestions are listed below.

Thank you very much for your time in improving our manuscript.

Sincerely,

K. Zhang

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### Point-by-point responses to the comments:

General comments:

#### **Review’s comment #1:**

1. The title of this paper is a bit long. I suggest changing to something like; “Changes in soil quality after converting *Pinus* to *Eucalyptus* plantations in southern China” or “Converting *Pinus* to *Eucalyptus* plantations alter soil quality in southern China”.

#### **Author’s response:**

Thanks for your suggestions. The title has been changed to “Changes in soil quality after converting *Pinus* to *Eucalyptus* plantations in southern China”.

#### **Review's comment #2:**

2. The objectives or questions to be answered in this paper should be more concisely presented in the Introduction section following your results (see suggestions below).

#### **Author’s response:**

This section has been modified according to your suggestions bellow.

#### **Review’s comment #3:**

3. Using different fields as representative of stages in time, or as you called it “space for time substitution method”, is not straightforward but could be addressed with some caution. For example in the Results section, when comparing between sites avoid writing phrases like ‘XX increased from 1st to 2nd generation’, say instead ‘XX was higher in 1st generation, compared to the 2nd generation’. Only in the Discussion section you can suggest that these differences might express changes over time. Please rewrite it over the entire paper.

#### **Author’s response:**

Thanks for your suggestions on accurate description. The descriptions of “increase” or “decrease” in Abstract and Result sections has been changed to descriptions like “higher” or “lower”.

**Review's comment #4:**

4. The Materials and methods section is unclear and should be reorganize (see specific comments and suggestions bellow).

**Author's response:**

This part has been reorganized according to your suggestions below.

Abstract

**Review's comment #5:**

P2780 , L8, L14: You mentioned SQI only twice in the abstract, you should use the full name "Soil quality index"

**Author's response:**

Full name "soil quality index" was used in the Abstract in the revised manuscript.

**Review's comment #6:**

P2780 , L13: "Soil total and available potassium were significantly lower..." - add values in parenthesis for "lower" and "higher".

**Author's response:**

This sentence has been changed to "Soil total and available potassium were significantly lower in *Eucalyptus* plantations (1.8-2.5 g kg<sup>-1</sup> and 26-66 mg, kg<sup>-1</sup>) compared to the *Pinus* plantation (14.3 g kg<sup>-1</sup> and 92 mg kg<sup>-1</sup>), but total phosphorus was significantly higher in *Eucalyptus* plantations (0.9-1.1 g kg<sup>-1</sup>) compared to the *Pinus* plantation (0.4 g kg<sup>-1</sup>)."

Introduction

**Review's comment #7:**

P2780 , L26: delete "caused by deforestation", this is not the only cause for land degradation. Also, add "is a serious problem affecting..."

**Author's response:**

This sentence has been rewritten as "Soil degradation is a serious problem affecting soil quality".

**Review's comment #8:**

P2781 , L2: delete "as well as produce timer". This is superfluous.

**Author's response:**

"as well as produce timer" has been deleted in the revised manuscript.

**Review's comment #9:**

P2781 , L3: change "or" by "and"

**Author's response:**

"or" has been changed to "and".

**Review's comment #10:**

P2781 , L9: "...may exhaust soil nutrients and decrease soil quality." add reference.

**Author's response:**

The reference has been added as "...may exhaust soil nutrients and decrease soil quality (Yu et al., 2000b)".

**Review's comment #11:**

P2781 , L15: change to "physic-chemical"

**Author's response:**

"physicochemical" has been changed to "physic-chemical".

**Review's comment #12:**

P2781 , L17: change to "A soil quality index (SQI) was proposed for quantifying..."

**Author's response:**

This sentence has been changed to "A soil quality index (SQI) was proposed for quantifying..."

**Review's comment #13:**

P2781 , L26: change "Some studies..." to "For example, it was reported that..."

**Author's response:**

"Some studies..." has been changed to "For example, it was reported that..."

**Review's comment #14:**

P2781 , L29 - P2782, L3: change "However, other studies..." to "It was also found that the conversion of...in other places (Binkley et al. 2004)."

**Author's response:**

"However, other studies..." has been changed to "It was also found that the conversion of...in other places."

**Review's comment #15:**

P2782 , L4: write "soil organic carbon" instead of "SOC".

**Author's response:**

"SOC" has been changed to "soil organic carbon".

**Review's comment #16:**

P2782 , L8 -- - 9: change "In order to..." to "Here we assessed the effects...", and "we selected adjacent..." to "by examining adjacent..."

**Author's response:**

"In order to..." has been changed to "Here we assessed the effects...".

"we selected adjacent..." has been changed to "by examining adjacent...".

**Review's comment #17:**

P2782 , L13: change to "soil quality index using the principal component analysis"

**Author's response:**

This sentence has been changed to "soil quality index using the principal component analysis".

**Review's comment #18:**

P2782 , L15: Rephrase clarifying your questions or objectives, something like “Following the above, we tested the effect on soil's bio-chemical quality after: (1) converting...(2) successive *Eucalyptus* plantings with rotation time of five years...”

**Author's response:**

Thanks for your careful suggestions. This sentence has been changed to “Following the above, we aimed to test the effect on soil bio-chemical quality after: (1) converting *Pinus* to *Eucalyptus* plantations, and (2) successive *Eucalyptus* planting with rotation time of five years in southern China”.

## Materials and methods

**Review's comment #19:**

A Fig showing the area in which the study was conducted could contribute much to this paper. I would also recommend adding pictures of the different sites (i.e. MP and G1-4).

**Author's response:**

Thanks for your wonderful suggestions. The Fig showing the study area and the pictures of the different sites (MP and G1-4) were added in the revised manuscript.

**Review's comment #20:**

This section (2.1) should be rearranged, whereas you explain first about the *Pinus* area. Then, what constitute each one of the 4 plots (i.e. G1-4) :(a) age of *Eucalyptus* planting, (b) time since the first *Eucalyptus* generation, (c) vegetation cover in each plot, and (d) treatment including how it was planted (seedling or sprouts, etc.). All this information exists in this section but it is not properly arranged, which make this section a bit confusing.

**Author's response:**

We are sorry for this confusing. This section has been rearranged as below:

Before 1980s this area was dominated by *Pinus massoniana* Lamb. (*Pinus*), which was of 30-year rotation (clearing and new planting) and was used for fire wood, timber and oil production. In 1980s fast-growing *Eucalyptus* with 5-year rotation period began to replace *Pinus*. The 1<sup>st</sup> generation *Eucalyptus* was planted with a density of about 1400 trees ha<sup>-1</sup> after clear-cutting, fire clearance and full reclamation (plowed to 50 cm depth). The 2<sup>nd</sup> generation *Eucalyptus* was regenerated by sprouts. The 3<sup>rd</sup> generation *Eucalyptus* was planted with seedlings after strip reclamation (50 cm depth). The 4<sup>th</sup> generation was regenerated by sprouts again. The leaf, branch and bark litter were kept in the plantation during the plant growth period. However, at harvest time most branch litter was removed and burned before the next rotation, and soil erosion happened easily due to the lack of vegetation protection during the crop transition periods.

Before *Eucalyptus* planting, base fertilizer (500 g seedling<sup>-1</sup>, N:P:K = 10:15:5) was added into a 20 cm depth soil hole and covered with soil. At 6, 12 and 24 months after planting, 250, 500 and 500 g, respectively, of fertilizer (N:P:K =

15:10:8) per tree was separately added in soil holes that were 30 cm away from each tree. The application of herbicide (glyphosate) was performed once a year during the first 3 years after *Eucalyptus* planting and consequently the coverage of understory plants was less than 50%. However, the understory coverage increased gradually in the 4<sup>th</sup> and 5<sup>th</sup> year after *Eucalyptus* planting. During sampling time, the tree, shrub and grass coverage in the *Pinus* plantation was about 60%, 25% and 70%, respectively. The tree, shrub and grass coverage in the *Eucalyptus* plantations was similar, about 40%, 10% and 45%, respectively. The litter layer was about 3 cm depth in the *Pinus* plantation and 1 cm depth in the *Eucalyptus* plantations.

**Review's comment #21:**

P2782 , L25: change to “...lateritic red soils derived from arenaceous shale with a profile depth of more than 80 cm. Soils' pH range from 4 to 5”

**Author's response:**

This sentence has been changed to “Soils in the region are mainly lateritic red earth with a profile depth of more than 80 cm. Soil's pH range from 4 to 5 (Chen et al., 2013).”

**Review's comment #22:**

P2783 , L1: Please rephrase this sentence, it is unclear what this *Pinus* area served for, and what do you mean by rotation. I suppose that you meant that the *Pinus* was used to produce oil and there was a clearing and new planting every 30 years, but I'm not sure.

**Author's response:**

We are sorry for the unclear description. You are correct. The accurate management is as follows: *Pinus* with 30-year rotation (clearing and new planting) was used for fire wood, timber and oil production. In the revised manuscript we have rewritten and rearranged this paragraph (Response to Review's comment #20 for details). Thanks for your comments.

**Review's comment #23:**

P2783 , L3: This is unclear. The *Eucalyptus* was planted there or there was a natural encroachment process and also planting?, please clarify this.

**Author's response:**

The *Eucalyptus* was planted there. According to your Comment #20, we have rewritten this sentence as “In 1980s fast-growing *Eucalyptus* with 5-year rotation period began to replace *Pinus*. The 1<sup>st</sup> generation *Eucalyptus* was planted with a density of about 1400 trees ha<sup>-1</sup> after clear-cutting, fire clearance and full reclamation (plowed to 50 cm depth).”.

**Review's comment #24:**

P2783 , L1-- - 3: mention the species name for the *Pinus* and *Eucalyptus* as you did in P2782, L10-- - 11.

**Author's response:**

In the revised manuscript the species name for *Pinus* and *Eucalyptus* has been mentioned when first appear in this section and Introduction.

**Review's comment #25:**

P2783 , L8: change to “1200 - 1600 trees ha<sup>-1</sup>” . Your error rage is of 400 trees per ha there is no reason to present a greater accuracy than 100 trees ha<sup>-1</sup>.

**Author's response:**

We are sorry for the inaccurate description. We described it according to what the farmers said. In our research sites *Eucalyptus* density is about 1400 trees ha<sup>-1</sup>. We have changed this sentence to “... with a density of about 1400 trees ha<sup>-1</sup>”.

**Review's comment #26:**

P2783 , L9: delete “without plowing”, it is superfluous.

**Author's response:**

“without plowing” has been deleted in the revised manuscript.

**Review's comment #27:**

P2783 , L14: change “put” to “added” (also in L17 instead of “applied”).

**Author's response:**

In the revised manuscript “put” and “applied” have been changed to “added”.

**Review's comment #28:**

P2783 , L25-- - 27: Please delete, this is superfluous. Write instead “Three 20 m X 20 m plots were sampled in each site...”

**Author's response:**

In “Experimental design and sampling” section, we introduced the experimental design at first and we keep them in this paragraph. According to your comments and Comment #7 of Reviewer #1, we changed this sentence to “Three 20 m × 20 m plots were randomly marked out in each plantation site. Each plot is more than 20 m away from another.”

**Review's comment #29:**

P2784 , L1-- - 4: move it to section 2.1 (see my previous comment on section 2.1).

**Author's response:**

This part has been moved to section 2.1 (Review's comment #20 for details).

**Review's comment #30:**

P2784 , L9- - - 10: Please delete this sentence “The soil samples were immediately...laboratory.”

**Author's response:**

This sentence has been deleted.

**Review's comment #31:**

P2784 , L11-- - 13: change “Some soil...” to “Soil samples were stored at 4C...activity analysis, or air dried for chemical analyses.”

**Author’s response:**

“some soil ...” has been changed to “Soil samples were stored at 4 °C for soil microbial biomass and enzyme activity analyses, or air dried for chemical analyses”

**Review’s comment #32:**

P2784 , L24: change “was put in” to “were added to”

**Author’s response:**

“was put in” has been changed to “were added to”

**Review’s comment #33:**

P2785 , L13-- - 14: change the title to “Calculation of the soil quality index”, and also in L14 change “SQI” to “The soil quality index was...”.

**Author’s response:**

This title has been changed to “Calculation of the soil quality index”.

“SQI” has been changed to “the soil quality index”.

**Review’s comment #34:**

P2785, L15-- - P2786, L-- - 14: This all section is unclear and should be rearranged. You used three different criteria to define your MDS, and three steps for calculating SQI. Please add an explanation justifying why you used these criteria.

**Author’s response:**

We used these criteria according to Andrews and Carroll (2001). We revised this section in the revised so as to make it more clear.

The soil quality index (SQI) was calculated according to Andrews and Carroll (2001), who elaborated SQI through the following three steps: definition of a minimum data set (MDS), assignment of a score to each indicator by linear scoring functions and data integration into an index.

At first, MDS was identified by three steps in our study. (1) Data screening: one-way analysis of variance was performed for soil chemical and biological properties, only variables with significant differences between treatments ( $p < 0.05$ ) were chosen for the next step. (2) Selection of representative variables: principle component analysis (PCA) was performed on the variables chosen from step (1); only principal components (PCs) that explained at least 5% of the variation in the data up to 85% of the cumulative variation were examined within each PC, only weighted factors with absolute values within 10% of the highest weight were retained for the MDS. (3) Redundancy reduction: multivariate correlation coefficients were used to determine the strength of the relationships among variables. Well-correlated variables (Correlation coefficient  $> 0.70$ ) were considered redundant and candidates for elimination from the data set. To choose variables within well-correlated groups, we summed the absolute values of the correlation coefficients for these variables and assumed that the variable with the highest correlation sum best represented the group. The choice among

well-correlated variables was also based on the published references and expert opinion about the soils and sites (Xu, 2000; Wang et al., 2008; Yu et al., 2009). Any uncorrelated, highly weighted variables were considered important and retained in the MDS.

Secondly, linear scoring function was used for converting measured values to scored values. Indicators were ranked in ascending or descending order depending on whether a higher value was considered 'good' or 'bad' in terms of soil function. In our study, all variables were 'more is better'. The following linear scoring function was used in our study (Zheng et al., 2005):

$$S_{ij} = \frac{V_{ij} - V_{i\min}}{V_{i\max} - V_{i\min}}$$

Where  $S_{ij}$  is the score of soil variable  $i$  of sample  $j$ ,  $V_{ij}$  is the observed variable value of sample  $j$ ,  $V_{i\max}$  is the highest value of variable  $i$ , and  $V_{i\min}$  is the lowest value of variable  $i$ .

Thirdly, the scores of the indicators were integrated into a SQI according to Andrews et al. (2002) as follows:

$$SQI = \sum_{i=1}^n \frac{S_i}{n}$$

Where  $S_i$  is the score assigned to indicator  $i$ , and  $n$  is the number of indicators included in the MDS.

**Review's comment #35:**

P2786 , L24-- - P2787, L5: "We acknowledge...Therefore" This should be at the end of this section and try changing to something like "Although the three..." and delete "Therefore".

**Author's response:**

This part has been put at the end of the paragraph and revised as follows:

Although the three 20 m × 20 m plots established per site do not constitute true replicates, because they are located within the same site of the 5 plantations (*Pinus*, 1st, 2nd, 3rd and 4th generations *Eucalyptus* plantations) and no plots were established in other stands with similar plantation characteristics, these plantation stands occur in similar topographic conditions and soil parent material, and they were similar in planting history of *Pinus* plantation before the 1980s. That allowed us to consider the five sites as different treatments."

Results

**Review's comment #36:**

When first time in this section mention the complete name, e.g. in P2787, L14: change "SOC, TN and AN" to "Soil organic carbon (SOC), Total nitrogen (TN) and alkaline hydrolytic nitrogen (AN)..." do so for other features over the entire section.

**Author's response:**

All abbreviations in this section were mentioned with the complete name when they



appeared at first.

**Review's comment #37:**

P2787, L16: change “decreased” with “lower” and do so over the entire section. It should be “They were...*Pinus* plantation, and significant lower in the 1st...”

**Author's response:**

Thanks for your suggestions. As you suggested, the descriptions of “increase” or “decrease” in Abstract and Results sections has been changed to “higher” or “lower”.

**Review's comment #38:**

P2787, L17: change to “Fig. 1a-c” (see comments on Figures bellow).

**Author's response:**

All the figures have been rearranged and organized. The citations in the text have been rewritten according to your suggestion.

**Review's comment #39:**

P2788, L1: same as above change to “Fig. 1e”.

**Author's response:**

All the figures have been rearranged and organized. The citations in the text have been rewritten according to your suggestion.

**Review's comment #40:**

P2788, L5: change “among” to “between” and “Fig. 1e” to “Fig. 1f”

**Author's response:**

“among” has been changed to “between”.

All the figures have been rearranged and organized. The citations in the text have been rewritten according to your suggestion.

**Review's comment #41:**

P2788, L7: change to “Fig. 1g”. Figures should be mentioned in consecutive order in the text and organized that way.

**Author's response:**

All the figures have been rearranged and organized. The citations in the text have been rewritten according to your suggestion.

**Review's comment #42:**

P2788, L9: write the complete name e.g. “microbial biomass carbon (MBC)” do so over the entire Results section when first time mentioned.

**Author's response:**

All abbreviations in this section were mentioned with the complete name when they appear at first.

**Review's comment #43:**

P2788, L10: MBN was not significantly higher in MP compared to G plots so please

delete this sentence. Again change “decreased significantly in the 1st...” with “was significantly low in the 1st...” (See general comments above).

**Author’s response:**

This sentence has been deleted.

The “increase” or “decrease” has been changed to “higher” or “lower” as below. “Soil MBC was significantly lower in the 1st and 2nd generation of *Eucalyptus* plantations than in the 3rd and 4th generations. Soil MBN was only significantly lower in the 2nd generation. The MBC/MBN ratio was only significantly higher in the 2nd generation *Eucalyptus* plantation than in other plantations.”

**Review’s comment #44:**

P2788, L12: change to “...3rd and 4th generations (Fig. 2a).”

**Author’s response:**

Due to the addition of a new figure, all figures have been rearranged and the citations in the text have been updated.

**Review’s comment #45:**

P2788, L13: change to “Soil MBN was only significantly lower in the 2nd generation (Fig. 2b).”

**Author’s response:**

This sentence has been changed to “Soil MBN was only significantly lower in the 2nd generation”.

Due to the addition of a new figure, all figures have been rearranged and the citations in the text have been updated.

**Review’s comment #46:**

P2788, L13-- - L16: Please delete this you already wrote it above.

**Author’s response:**

This sentence has been deleted.

**Review’s comment #47:**

P2788, L18: change to “MBC/MBN ratio was only significantly higher...”

**Author’s response:**

This sentence has been changed to “MBC/MBN ratio was only significantly higher”.

**Review’s comment #48:**

P2788, L24: change to “Fig. 3b and c” or “Fig. 3b,c” (see comments on Figures bellow).

**Author’s response:**

All the figures have been rearranged and organized. The citations in the text have been rewritten according to your suggestion.

**Review’s comment #49:**

P2788, L26: change to “Fig. 3d-f” Figures should be mentioned in consecutive order

in the text and organized that way.

**Author's response:**

All the figures have been rearranged and organized. The citations in the text have been rewritten according to your suggestion.

**Review's comment #50:**

P2789, L3: change subtitle to “Changes in soil quality index”

**Author's response:**

This title has been changed to “Changes in soil quality index”.

**Review's comment #51:**

P2789, L4-- - 6: If pH was not significantly different and is not an indicator for soil quality so why do you show or discuss it? Please delete this and also delete Fig. 1a (see comments on Figures bellow).

**Author's response:**

The figure about soil pH has been deleted. All figures have been rearranged.

**Review's comment #52:**

P2789, L6-- - L11: the following: “Three PCs were selected...soil quality indicator scores (Table 2)” should be in the Methods and materials section above (see also comments on Tables bellow).

**Author's response:**

This paragraph has been deleted after we removed previous Table 1.

Discussion

**Review's comment #53:**

P2790, L20-- - 25: You did not test the effect of litter or herbaceous vegetation on nutrient depletion by preventing weathering or physical erosion, so delete or provide the appropriate References.

**Author's response:**

This sentence has been deleted.

**Review's comment #54:**

P2790, L20-- - 21: change to “...and nutrient leaching (Yu et al. 2000a). In our study sites, herbaceous vegetation was treated with herbicide during the first three years of the *Eucalyptus* planting exposing the uncovered soils to erosion”.

**Author's response:**

This sentence has been changed to “In our study sites, herbaceous vegetation was treated with herbicide during the first three years of the *Eucalyptus* planting exposing the uncovered soils to erosion”

**Review's comment #55:**

P2790, L23: change “litter layer in *Eucalyptus*...” to “litter cover in the *Eucalyptus*...” and “could not offer” to “did not offer”.

**Author's response:**

Considering the changes according to your comments #53 and #54, we deleted this sentence in the revised manuscript.

**Review's comment #56:**

P2791, L4: change to “of the soils’ physic-chemical...” instead of “to the soil physic-chemical...”

**Author's response:**

“to the soil physic-chemical...” has been changed to “of the soils’ physic-chemical...”.

**Review's comment #57:**

P2791, L4-- - 6: change to “These could have been the cause for the bio-chemical depletion observed in soils that underwent *Pinus* to *Eucalyptus* conversion.”

**Author's response:**

This sentence has been changed to “These could have been the cause for the bio-chemical depletion observed in soils that underwent *Pinus* to *Eucalyptus* conversion”.

**Review's comment #58:**

P2791, L11: change to “...and litter production is small, increasing as the plant get older (Xu, 2000).”

**Author's response:**

This sentence has been changed to “During the early stages of plant life, nutrient absorption is high and litter production is small, but as the plant gets older nutrient absorption decreases and litter production increases (Xu, 2000)”.

**Review's comment #59:**

P2791, L12: The phrase: “The short rotation...” is unclear, something is missing here.

**Author's response:**

This sentence has been changed to “The 5-year rotation of *Eucalyptus* plantations and frequent cutting led to severe soil nutrient loss.”

**Review's comment #60:**

P2791, L15: change the title to “Increase in soil quality in the 3rd and 4th generations of *Eucalyptus* planting” (see general comments above).

**Author's response:**

The title has been changed to “Increase in Soil Quality in the 3rd and 4th Generations of *Eucalyptus* Planting”.

**Review's comment #61:**

P2792, L4-- - 6: add Reference to this statement.

**Author's response:**

Reference (Yu et al., 2000a) has been added to this statement.

**Review's comment #62:**

P2792, L10: change to “Our results suggest a recovery in soil quality after the 3rd and 4th generations of *Eucalyptus* plantings (Fig. 4).” Delete the next words “however, we could...lack of data”, it is superfluous.

**Author's response:**

This sentence has been changed to “Our results suggest a recovery in soil quality after the 3rd and 4th generations of *Eucalyptus* planting”. The next words “however, we could...lack of data” has been deleted.

**Review's comment #63:**

P2792, L15: delete “in future research”.

**Author's response:**

“in future research” has been deleted.

Conclusions

**Review's comment #64:**

P2792, L17: change to “Findings from our study suggest that...*Pinus* to *Eucalyptus* plantations, partially recovering in the following 3rd and 4th generations.” Delete the following “though it was...plantation.”

**Author's response:**

This sentence has been changed to “Findings from our study suggest that soil quality decreased significantly in the 1<sup>st</sup> and 2<sup>nd</sup> generation *Eucalyptus* plantations after converting *Pinus* to *Eucalyptus* plantations, partially recovering in the following 3<sup>rd</sup> and 4<sup>th</sup> generations”.

The following “though it was ... plantation” has been deleted.

**Review's comment #65:**

P2792, L20-- - 22: change to “might have been contribute to the changes observed in the soil quality during the successive...” The “U” shape is not clear here and there is no further evidence for this behavior nor you have enough replicates to support this.

**Author's response:**

This sentence has been changed to “Changes in tree species, reclamation, herbicide application and long-term fertilization might have contributed to the changes observed in the soil quality during successive *Eucalyptus* planting”.

**Review's comment #66:**

P2792, L24: change to “...such as maintenance of litter and herbaceous cover and reduction of soil disturbances during...the next planting rotation...to maintain soil quality.” Delete these three words: “during plantation management”.

**Author's response:**

This sentence has been changed to “Improving management practices, such as maintenance of litter and herbaceous cover and reduction of soil disturbance during

logging and subsequent establishment of the next planting rotation should be considered to maintain soil quality”.

Tables

**Review’s comment #67:**

Table 1: is unnecessary. I suggest removing it or adding it as supplementary information.

**Author’s response:**

This table has been removed in the revised manuscript.

**Review’s comment #68:**

Table 2: present it in the Methods section after your explanation on the PCA and linear scores method (see comment on P2789, L6-L11).

**Author’s response:**

In the revised manuscript this table was present in methods section after explanation on the PCA and linear scores method during type setting period.

**Review’s comment #69:**

Also, I think that you present significant figures far beyond the accuracy that you can actually measure (Please see the following article (section 3): [http://www.elsevier.com/\\_data/assets/pdf\\_file/0008/145943/2014-01-15-Manuscript-p-reparation.pdf](http://www.elsevier.com/_data/assets/pdf_file/0008/145943/2014-01-15-Manuscript-p-reparation.pdf)).

**Author’s response:**

Thanks so much for your suggestions and reference. We agree with your comments on figures and accuracy. In previous Table 2 we present the scored values calculated from measured values. In addition, it is difficult to present some values (e.g.,  $0.003 \pm 0.002$  for TK in 1<sup>st</sup> generation of *Eucalyptus*) if we keep two decimal places. Finally we kept the Table as the first version in the revised manuscript.

Figures

**Review’s comment #70:**

Figure 1: Change to “Soil chemical properties...in the *Pinus* and the successive *Eucalyptus* plantations. MP, G1...” You should arrange your figures in a consecutive order as they are mentioned in the text, i.e. (b) should be (a) (c) should be (b) (f) should be (c) etc. (see comments above) Also, delete Fig. 1a. If it is not significant and does not contribute to SQI so you should not present it.

**Author’s response:**

The caption of the figure has been changed to “Soil chemical properties in the *Pinus* and the successive *Eucalyptus* plantations”.

The figure showing soil pH has been deleted, and all figures have been arranged in a consecutive order as they are mentioned in the text.

**Review’s comment #71:**

Figure 2: Also here change to “Soil microbial... in the *Pinus* and the successive

*Eucalyptus* plantations. MP, G1...”

**Author’s response:**

The caption of the figure has been changed to “Soil microbial biomass carbon and nitrogen in the *Pinus* and the successive *Eucalyptus* plantations”.

**Review’s comment #72:**

Figure 3: same as in Fig. 1.

**Author’s response:**

The caption of the figure has been changed to “Soil enzyme activities in the *Pinus* and the successive *Eucalyptus* plantations”.

All figures have been arranged in a consecutive order as they are mentioned in the text.

**Review’s comment #73:**

Figure 4: change to “Soil quality index... in the *Pinus* and the successive *Eucalyptus* plantations. MP, G1...” Please delete the curve line from the plot.

**Author’s response:**

The caption of the figure has been changed to “Soil quality index in the *Pinus* and the successive *Eucalyptus* plantations”.

The curve line has been deleted.

Fig 1

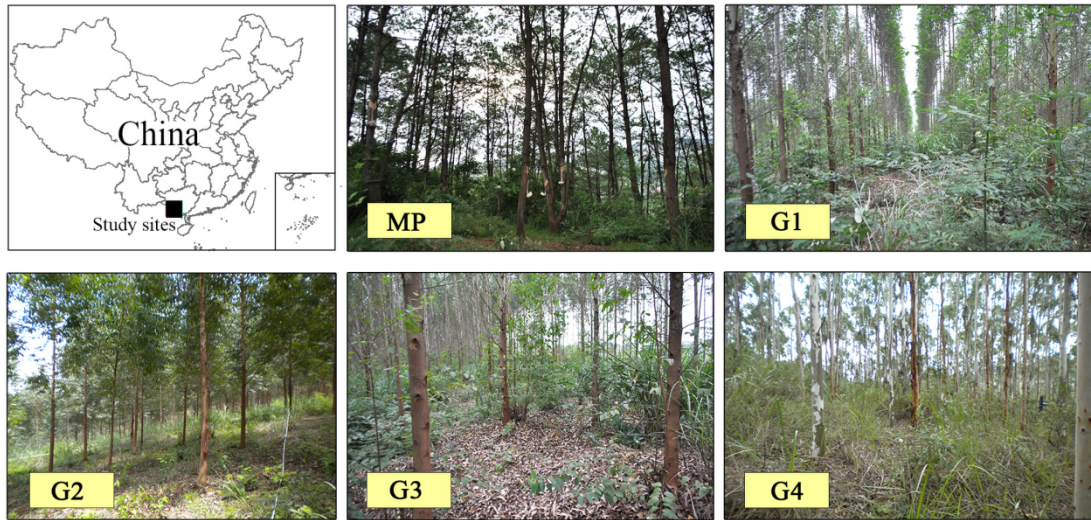




Fig 2

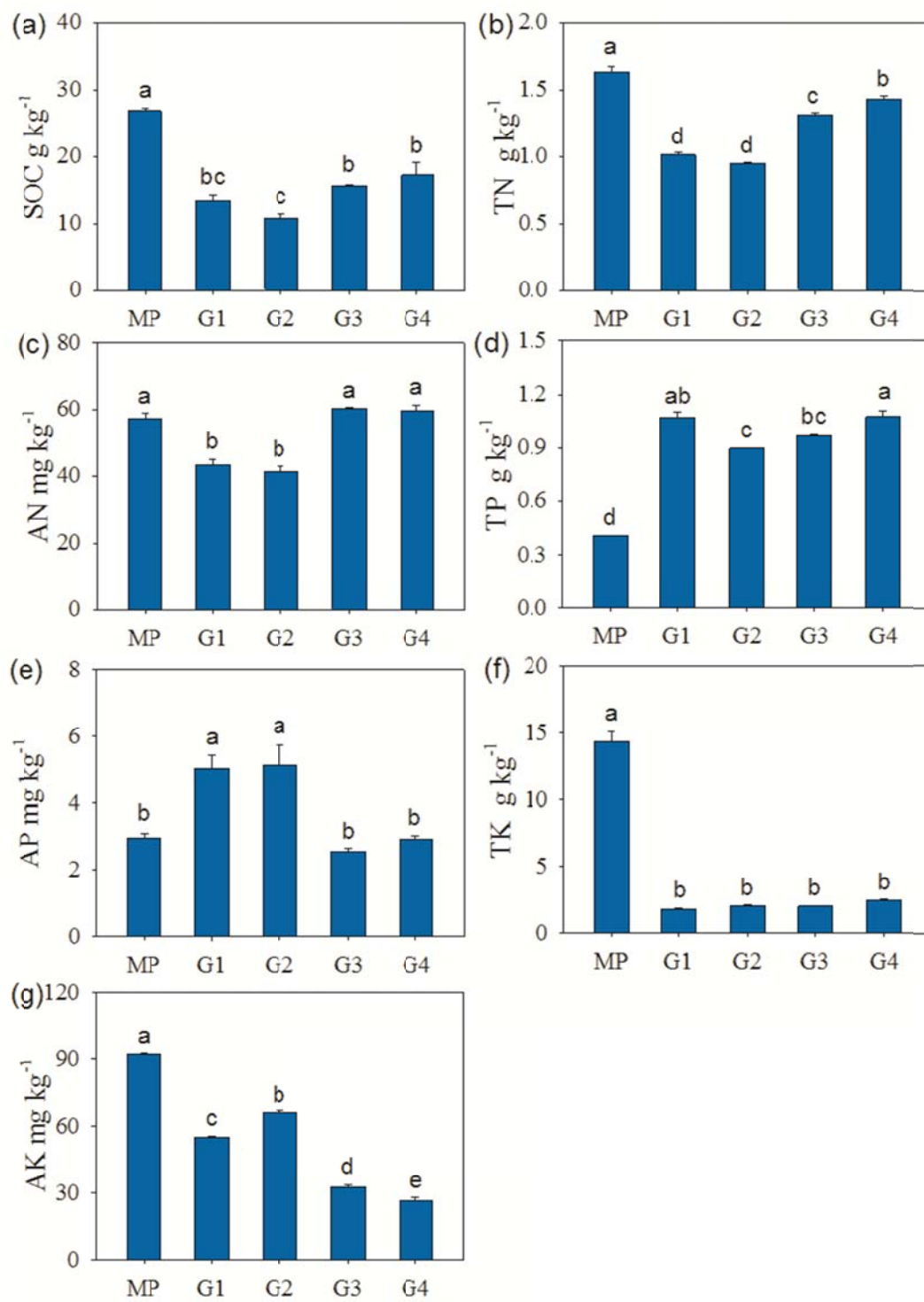


Fig 3

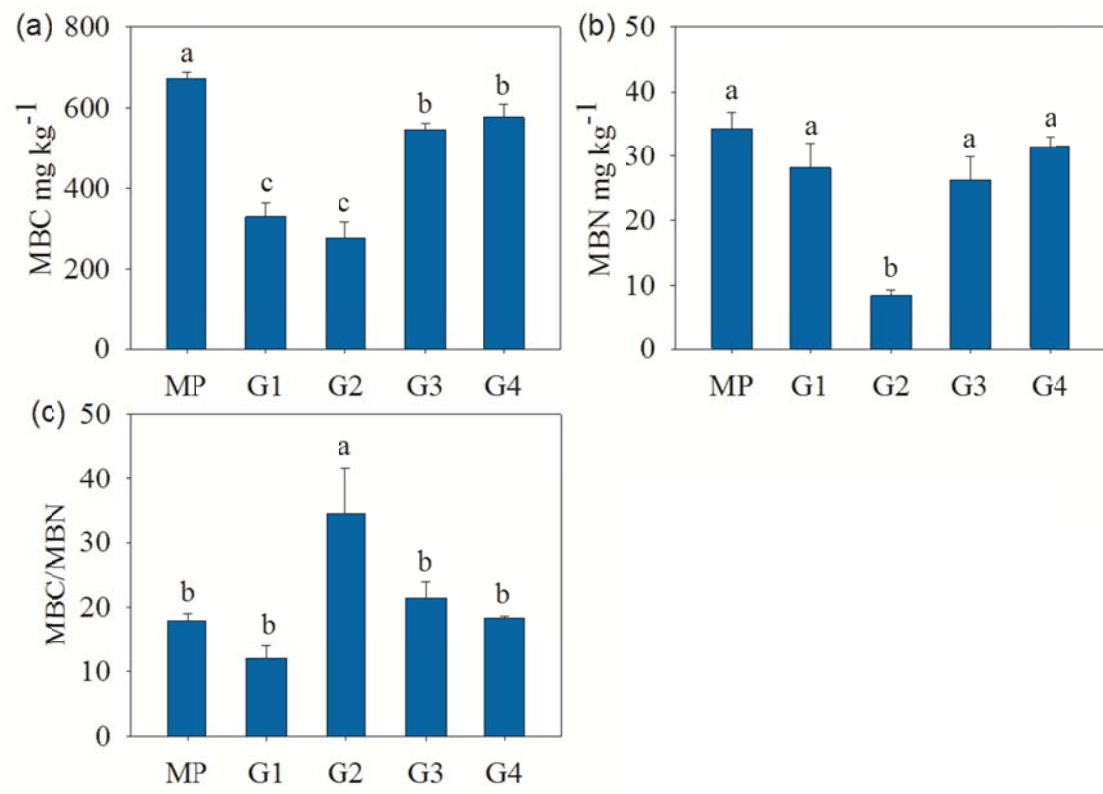


Fig 4

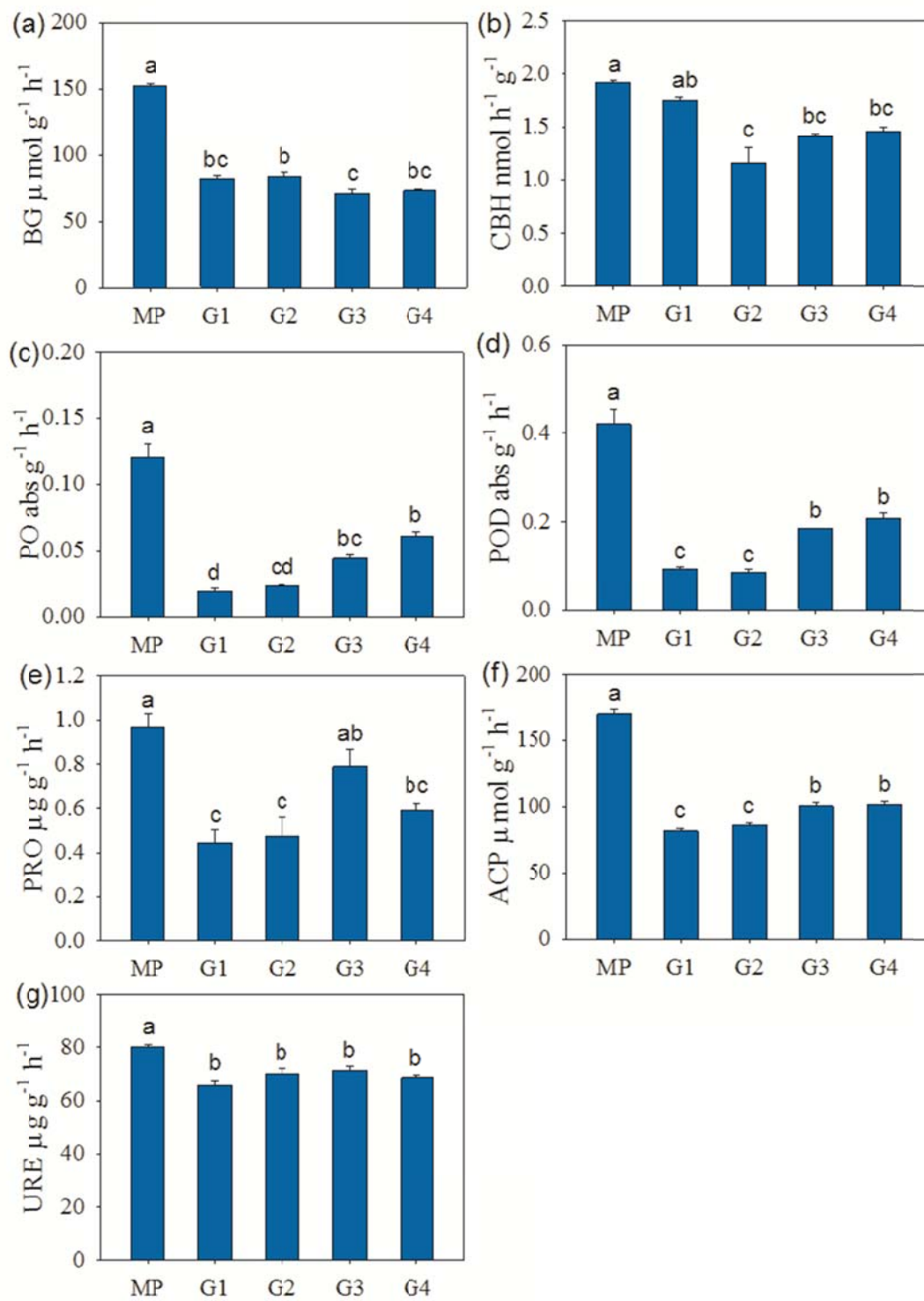


Fig 5

