Answers to the questions:

Reviewer #3:

1. Comment: Chen et al. used a long transect dataset to reveal the relationships between leaf delta15N and leaf metallic nutrients. This study is good and dataset is valuable.

   Answer: Thanks for your comments.

2. Comment: It should give a more general introduction about the leaf 15N. What is the meaning of leaf 15N value can be given?

   Answer: Thanks for your comments. We have added the statement about leaf $\delta^{15}$N (mark in blue color) in the introduction section as follows,

   Nitrogen (N) cycling has received considerable attention, because N is the key element in regulating productivity of terrestrial ecosystems (Fay et al., 2015; Wieder et al., 2015) and many nitroenous compounds generating from N cycling are associated with major environment issues (Bourgeois et al., 2018; Desmit et al., 2018). Natural N isotopic technique has been widely taken as a powerful tool in exploring the N biogeochemical cycling (Evans, 2001; Robinson, 2001), and nitrogen isotopic composition ($\delta^{15}$N) in leaf has been usually regarded as an integrator of N cycling (Evans, 2001; Robinson, 2001; Houlton et al., 2006, 2007; McLauchlan et al., 2007, 2013). This might be associated with the fact that leaf $\delta^{15}$N could indicate soil N availability (Craine et al., 2009; Högberg et al., 2011) and plant N utilization strategies (Kolb and Evans, 2002; Houlton et al., 2007). Thus, revealing the potential factors that influence leaf $\delta^{15}$N and investigating the relationships between these factors and leaf $\delta^{15}$N could help improve our current understanding of N cycling (Craine et al., 2009; Hobbie and Högberg, 2012).

3. Comment: Why did not include the climate factors into the analysis? As we know the climatic factors are the most important factors in controlling leaf isotope values.

   Answer: Yes, as we had mentioned in the introduction section, climatic factors, such
as temperature and precipitation, have been reported to exert important influences on the variations in leaf $\delta^{15}$N. However, we have emphatically explored the relationships between leaf $\delta^{15}$N and temperature and precipitation in another manuscript (Chen et al., under review). So in this manuscript, we just focused on the relationships between leaf $\delta^{15}$N and metallic nutrients and did not include the climate factors.

4. **Comment:** The AIC value is more useful to select which modeling is more powerful to build the relationships between isotope values and nutrients (Tables 1).

**Answer:** Thanks for your comments. We have calculated the $AIC$ values of each model as in Table 1. The model 3 has the lowest $AIC$ value of 1058.3, thus, the model 3 is the best for explaining the variations of leaf $\delta^{15}$N. Meanwhile, we find that the $AIC$ value of model 3 is only slightly higher than that of model 1, which means adding leaf Fe, Mn and Zn could not significantly improve the goodness of fit of the model 3 compared with that of model 1. Thus, the results of $AIC$ values are also consistent with the results of $R^2$ or adjust $R^2$, i.e. the $R^2$ or adjust $R^2$ of model 3 is only a little larger than that of model 1. Comparison of the two models shows that leaf K, Ca, Mg are the major factors the main driving factors of leaf $\delta^{15}$N.

Table 1. Multiple linear regressions of leaf $\delta^{15}$N against leaf metallic nutrients based on ordinary least-square (OLS) estimation.

<table>
<thead>
<tr>
<th>Model</th>
<th>$R^2$</th>
<th>Adjust $R^2$</th>
<th>$AIC$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.543</td>
<td>0.540</td>
<td>1091.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>2</td>
<td>0.150</td>
<td>0.145</td>
<td>1404.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>3</td>
<td>0.557</td>
<td>0.551</td>
<td>1058.3</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*Note: Model-1 is the multiple regression of leaf $\delta^{15}$N against leaf K, Ca and Mg; Model-2 is the multiple regression of leaf $\delta^{15}$N against leaf Fe, Mn and Zn. Model-3 is the multiple regression of leaf $\delta^{15}$N against leaf K, Ca, Mg, Fe, Mn and Zn. AIC, Akaike Information Criterion.*