Dear Editor of SE

Dr. Marc Oliva, oliva_marc@yahoo.com

I'm sending my comments to the Editor regarding the manuscript se-2016-126.

I would like you to note the following aspects:

1- Does the paper address relevant scientific questions within the scope of SE?

The manuscript titled ¨ Determination of critical pH and Al concentration of acidic Ultisols for wheat and canola crops¨ by M. A. Baquy, Jiu-yu Li, Chen-yang Xu, Khalid Mehmood, Ren-kou Xu is relevant to understanding soil-plant interaction.

The MS have a strong agronomic characteristic. It addresses important statements about soil pH management, as well as highlight soil chemical criteria for tow Ultisols and two crops (wheat and canola).

The basic question is: ¨To establish which acid soils need to be ameliorated for plant growth and the target status of soil acidity after amelioration, the parameters of critical soil pH and soil Al concentration must be determined, and methods to achieve this need to be developed.¨

The MS takes two winter crops, after pH and Al correction, the benefits of this correction are prolonged in soil (residual effects). In the sense, the better Al and pH levels in a soil should be reasoned considering a crop rotation and not only one crop. Thus, a better Al and pH levels will be defined for the more sensitive crop in the crop rotation adopted. This must be also addresses in the discussion.

1. Does the paper present novel concepts, ideas, tools, or data?

The concept and ideas are not novels; it knows by decades that crop yield decreasing with Al increases (and pH decreases). However, the experimental consistent, smart and the data were relevant to improve understanding chemical soil managements of these crops, concerning pH and Al.

2. Are substantial conclusions reached?

   Yes, see the comments below. ¨We hope these findings also help to protect the soils from degradation by reducing the excess use of lime in the studied location.¨ this statement is not well worked in the discussion section.

3. Are the scientific methods and assumptions valid and clearly outlined?

Yes, see the comments below.

4. Are the results sufficient to support the interpretations and conclusions?

Yes, in part.

I´m not sure about the soil Al speciation: commonly, Al^{3+} is missing in soils with pH 5.3 or upper. Al^{3+} pass toward $Al(OH)^{2+}$ or completely to $Al(OH)_3$ with zero free charge. Can the authors explain how Al was found in pH condition higher than 5.3?

One possibility can be found in 3 page Ln26; the soil samples were incubated with lime and Al by 2 weeks. It's a sufficient incubation time for total Al neutralization and pH equilibria? Another can be related to the method: The method to determine Al is indirect, ¨The exchangeable Al^{3+} was the difference between exchangeable acidity and exchangeable H^+ (Bertsch and Bloom, 1996).¨ A direct method to determines soil Al concentration can provide better results.

Explain what is causing the differences in the two locations (Hunan and Anhui). The difference found in Al exchangeable for wheat varied from 0,56 to 2,36. and such difference can represent 4,2 % and 15,22%. in the Al CEC.

Explain why is not possible to determinate the critical soil Al contents for canola. In the introduction section Lollato et al. (2013) has an important result to your consideration (Line 7 and 8 page 3).

Page 7 ln 5. Are there morphological effects on roots in the crops due to Al?

Can we extend the critical pH and Al values, obtained in this study, for another crops or the same crops for other soil types ? this must be addressed in the discussion.

In general, MS have a week point concerning the discussion of the data. It must be deeper in two aspects: Exchanchable Al versus soil pH. There is less exploration about the relationship soil pH and plant response. Thus, the discussion can be improved.

5. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)?

Provide more information about soil profile (soil profile descriptions, such as granulometry, colors; A horizon deep, Bt horizon characteristics etc…).

Important: How the pH and Al critical values were found?

6. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? In this sense the MS can be improved.

7. Does the title clearly reflect the contents of the paper? Yes!

8. Does the abstract provide a concise and complete summary? Yes, but it can be shorter.

9. Is the overall presentation well structured and clear?

I consider the MS strong point: the methodology is clear and well building.

10. Is the language fluent and precise?

Yes.

11. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used?

12. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated?

The figures must be reviewed, provide a better presentation in the figure size, figures alignments and figure statements (equation, soil types, any other informations). Pay special attention on all y axes of the figure 5, in the wheat root dry weight. Inside the figure 5 both soils are Hunan soil, and the equations are the same. Figure 4 there is no identification about what crop is it.

In the figures, provide the real curves on the observed points. Besides, the equation resulting of these curves should be presented in the figures (with R^2 and P values).

In the table 1. What means CEC?

13. Are the number and quality of references appropriate?

We suggest a review of literature used. There are few papers quoted in the MS originated from the last 5 years. Please recheck this section. By references sampling, I found inconsistences in Bertsch and Bloom, 1996 is not in the references.

Finally, it is recommended that the paper is published after major revisions.

Best regards,

The reviewer 2