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# *Interactive comment on* "Examining the fixation kinetics of chelated and non-chelated copper micronutrient and the applications to micronutrient management in semi-arid alkaline soils" *by* T. K. Udeigwe et al.

**S. López-Rayo (Referee)**

sandra.lopez@uam.es

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Comments to Authors

Comments on manuscript "Examining the fixation kinetics of chelated and non-chelated copper micronutrient and the applications to micronutrient management in semi-arid alkaline soils"

The manuscript is an interesting contribution on evaluating the availability of Cu in semi-arid alkaline soils. The several analysis conducted on the soils allow the discussion

of the kinetic effects in the Cu availability in soils as well as its relation with other micronutrients. The experiments developed can be of interest for readers of the Solid Earth; it fits with the journal scope and contributes significantly to the advance in the knowledge of Cu in soils. However, the manuscript needs improvements since despite the interesting experiments conducted the results distribution and the discussion done do not highlight the importance of them. The introduction however, has been very well presented. Thus, my recommendation is to improve the manuscript before it can be fully accept. I suggest some recommendations to do:

Authors must highlight the most important findings and avoid including too much information of data in the abstract.

The MATERIALS AND METHODS section has not been organized properly. The section 2.4 “Soil characterization” must be presented at the beginning of the section 2. The analysis of the soils represents a basis for the subsequent studies conducted on this soil (Tables 1, 2, 3). Furthermore, the Table 2 has been cited before in section 2.2 without further comments. I strongly recommend introducing these data at the beginning of the section of M&M. As a consequence, the section 3.1 commenting these properties must be presented on the M&M.

In the RESULTS AND DISCUSSION section the authors present a large number of data in the text and it is not clear if they are different or not from those presented in Tables and figures. Please, avoid to present repetitive and confusing information.

In general, the different soils have not been considered for statistical analysis as well as for the discussion by justifying this the sentence “The result is presented as the averages for all soils within each depth examined because examination of individual soils showed no justifiable difference or pattern among the soils that worth focusing our discussions on. Comparison was made between the chelated and non-chelated micronutrient treatments”. I do not agree with this fact. The results obtained for the different soils are not always similar and the soil characteristics presented in table 1,



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2, and 3 are different when comparing the soils. I strongly suggest to perform a proper statistical analysis and discussing the results considering also the different soils.

In Table 4, authors present the results obtained at two periods despite a wide range of samplings were done. Please, explain the reason of this fact or present all the data.

In page 2884 L-4 authors justify the Cu losses in the chelated treated soil due to a degradation of the EDTA. The EDTA is not a biodegradable chelating agent. Reference given (Meers et al. (2005), clearly explain this fact while presenting other ligand, the EDDS, as the biodegradable one. Possible, the competence with other elements such as Ca is one of the main responsible of the Cu loses. Please, check references for this.

Despite the study conducted on the competition of Cu with other micronutrients is really interesting, the results have not been presented in the best way. The Table 5 is confusing. The presentation of Pearson′s r correlations and significance could be more convenient. For indicating the level of significance the symbols with * may be more convenient too.

In Section 3.4, the Table 7 is not mentioned correctly (Table 9 was written instead). I recommend to reduce the information presented in this section. It is interesting that the authors adjust the data to different models but, by presenting only the most suitable models more clear for the readers will be in order to understand the kinetics of the Cu fixation.

Other technical comments:

The SI in the units is recommended (as eg. Avoid the use of gallon or wk, without further explanation)

Page 2879 – L 10. “Multiple spots” are not a proper reference. Authors must indicate the number of points sampled; at least in a range.

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Interactive comment on Solid Earth Discuss., 7, 2875, 2015.