Review of: "Spatial Analysis of Soil Fertility Using Geostatistical Techniques And Artificial Neural Networks"

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Potential competing interests: No potential competing interests to declare.

To ease revision following this review, all the review points were left according to the sections of the article.

ABSTRACT

The abstract to me is very concise, explicit and informative. It really gives a digestible synopsis of the work.

INTRODUCTION

The introduction is good, sets a scene for the work and points out clear goals.

MATERIALS AND METHODS

Is very illustrative of where the study was conducted

Soil sampling

Was very explicit. Great job. As for the mathematical formulae, please make sure they are written in a meaningful manner. They seem coded. I understand, but most readers will not.

RESULTS AND DISCUSSION

Statistical analysis

Create some chats that make the paragraphs after Table 1 easier to visualize. It is a little bite boring when only text is involved. What are the implications or relevance of these observations to practitioners, and which other scientific works show results similar to these either in alignment or contradiction. Try doing some vocabulary proofreads, such as changing “OM” in the last paragraph to “OM”.

Interpolation of soil properties

Identify each soil variable chart in the figure caption of Figure 4 & 5 using letters that are put on the respective charts. E.g., part of figure 5 can become: **Figure 5**. Model maps of soil variables in the production field "Agronomy". (a) pH., (b) … and so on. Again, pay attention to English vocabulary.

Generally, this part is not well discussed.

Assessing the reliability of prediction models

Is OK.

Generation of the digital soil fertility class model

Number of soil fertility classes

Make it clear to the reader what makes the 5-class and not the 6-class model the best mention other works that corroborate this. Apart from the last two paragraphs before “Assessment of the predictive capacity of the digital soil fertility classes model” all the others under “Number of fertility classes” have very beautiful facts, but that leave the question of how important are they to practitioners. Make sure to include these in the discussion. Also, edit Figure 7 as prescribed for Figures 4 & 5.

Assessment of the predictive capacity of the digital soil fertility classes model

This part is well presented and discussed. May we however add a non-mathematic or physical validation? E.g. similar classes elsewhere that with similar cultures, shrub or herb abundance, etc.

CONCLUSIONS

Good, though paragraph two cannot be inferred directly from the “Results and Discussion” section.

On a general, not the work is very good piece that has major impacts on agricultural fields management and assessment. Therefore I recommend that the work be published, sequel to the few suggestions highlighted.

NB to the Authors: Why not try Analytical Hierarchy Process for determination of the influence of all the factors on soil fertility, followed by weightage overlay analysis in ArcGIS to produce the soil fertility map. It is shorter and gives the possibility for a lot more classes than five. Please this last section is, and only remains a proposal.