

Interactive comment on “Agropedogenesis: Humankind as the 6th soil-forming factor and attractors of agrogenic soil degradation” by Yakov Kuzyakov and Kazem Zamanian

Anonymous Referee #1

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This review paper addresses humankind impacts on soil development. The authors highlight the importance of humankind impact as new soil formation factor and distinguish it from natural soil formation factor due to the impact that it has on the soil development. As the authors pointed out in their text the importance of humankind impacts on soil formation has been acknowledged by some researchers but what makes the view of authors special here is the way they take into account its contribution in soil development. They argue that the natural soil processes result in soils with diverse functions and properties, while the humankind interferences in the ecosystem result in soils with uniform and similar functions and properties. In this sense, the impact of humankind on soil development is introduced as a convergence factor and neutral soil

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formation factors as a divergence factor.

The authors' opinion here is mainly supported by some examples at which different land uses (mainly forest) were converted to agricultural use. I found the view of authors interesting and considered it as an emerging topic in the field of fundamental soil science. In general, I do not have any fundamental comments on the concept presented here and believe that this review should be published as a review paper in the journal of Biogeosciences Discussion.

Given that all the authors are very experienced scientists with a substantial track record, this is a pity, and I cannot refrain from emphasizing that the text and figures need some careful revisions. Some examples are listed below:

Fig.1 is an interesting figure showing the main concept presented in this review. However, it was hard for me to follow its context and would suggest some modifications to this figure as follows: 2) place the legend on the right side of the figure. In its current location is confusing and the readers may relate it to the time, 2) Does the red arrow on x-axis show start of cultivation decades? if yes remove its label out of the figure that one can read it. otherwise, it looks like two different labelings,3) it is not clear what does it show the label " duration/intensity of cultivation. Do you mean a time period between the start of cultivation till now? If yes, show it with an arrows bellow the x-axis, 4) move the label of x-axis more to the bottom and make some space with indicated time.

In fig. 2, what does it mean 'Soil genesis based on the development of concepts' in the caption of figure? I would recommend the authors to rearrange this figure and improve its readability. In the current version, it is hard to follow its context and message. Found a better way of relating this information together, for instance, the factors and parental materials, climate, etc. Here and elsewhere in the figures, I found it annoying for readers to follow a diagram with varying font sizes and styles.

In Fig. 4: It is hard to understand the message of this figure. What does it mean factors

2: 38% and 1:48% in the label of x-axis and y-axis. Do you mean a relative increase of 38% and 48%? Where does the 1 start?

Fig. 5: rephrase the caption, it is a confusing sentence and hard to read. In Fig. 5a and 5b, explain in the legend what do show the solid lines. The legend of Fig. 5c and 5d are confusing. Use a separate legend for every four cases.

Fig. 6: This is an interesting figure. State that this is a hypothetical trend. How do the authors argue on the proposed time? It looked to me that the authors aimed to show here the relative responses of each process with time and the selection of time is not based on any experimental evidence. If that is true I suggest using a normalized time between 0 and 1 to avoid giving a weak impression.

Fig. 9: how did the authors generate these figures? Are they hypothetical figures? If yes mention it in the caption. What does it mean stage in these figures? Stage of what?

Some minor typos:

Line 220: Replace “decreases “ with “decrease “

Line 33: replace ‘fulfils’ with ‘fulfills’

Line 378: replace because with become

Line 279: replace “independent of” with “independency of”

Line 149: Do the author mean the function rather than production?

Line 138: Replace “ develops” with “ develop.”

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