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REVIEWERS COMMENTS AND RESPONSES OF THE AUTHORS

COMMENTS TO THE AUTHORS

Editor Landbauforschung

We will accept your manuscript incorporating major revisions based on the comments of the reviewers. As you see the outcome of their evaluations differs. I agree to most of the points Reviewer #2 is highlighting. So to sharpen your position I strongly recommend to consider these remarks and to improve the text further. Your arguments will grow in weight. Also the consideration of recent other publications on digital innovations in / and participatory processes, e.g. M Ornetzer et al. (2006), B Rudram et al. (2016), VS Osipov et al. (2017), A Knierim et al (2018) were recommended.

Please follow strictly the instructions for authors. Please especially check the literature and on complete citations of your text passages. The revised version of your manuscript will be evaluated again by the Chief editor and, if necessary, by the reviewers.

Authors' response: Several improvements have been made to the text, in order to comply with reviewers' comments and further support our arguments. The suggested publications, listed above, were also considered.

The current size of the position paper is approx. 10.500 characters (including spaces) and 35 references are cited.

Reviewer # 1:

Short summary of the aim of the paper, its main findings and conclusions

The aim of the paper is to define the conditions for digitalization in agriculture to be efficient for the agroecological transition toward sustainable and resilient food systems. For this purpose, two prerequisites are needed, according to the authors: 1/ to involve end-users in the innovation process and ii/ to create a peer-to-peer community including all farmers to ensure the diffusion of innovations.

General comments

The paper is very clear and convincing. The title reflects the main message. However, there is one point which remains unclear for me: why do the authors need to mention the ESR process at the beginning of the paper? Is it because DiA may be usefull to process E and S, but not R? And that to be able to fulfill the process R, two prerequisites are needed? If yes, I propose to mention this more clearly in the concluding section.

Authors' response: Improvements in the first paragraph has been applied in order to make clearer the intended message.

Specifically, we omitted a very detailed description of the ESR process and focused on the fact that the agroecological transition foresees the employment of innovative frameworks, tools and technologies, re-directed towards sustainability pursuits, therefore a potentiality of using such innovative frameworks, tools and technologies in agroecology exists, while quite of few of them are already described to move upon this transition path or other claim to improve agricultural efficiency.

Detailed comments referring to the line numbers

- L11-13: not only as a linear process, but also as 3 different possibilities, from the less to the most 'ambitious'.

Authors' response: We follow MacRae et al. (1990) description, therefore their approach, describing the linear nature of the transition process, should be maintained.

- L46: 'since a decade ago' and L49: 2 related references from 2008 and 2011, so also 10 years ago. It could be argued that things changed during the last 10 years (2010 to 2020).

Authors' response: A correction has been made to the mistaken data of the reference (Rains et al., 2011 instead of 2008)

- L91: the concept of 'democratization of innovation' is interesting, but is the condition proposed always true (ie: in what extent smartphones were developed with endusers?)

Authors' response: Indeed, the smartphones development, as currently occurs under a manufacturer-centric model, does not fall under User Innovation (UI). However, we already mention that UI is a fundamentally different approach, so the potentiality of democratizing the innovation development process is possible, as Douthwaite, 2002 mentions, with existing examples applied in agriculture, already stated in the text. Therefore, we believe no change in the certain point should be made.

- L93-95: I understand that the process was the right one, but that the goal is not yet reached ('only need to be scaled up and scaled out' ? the word 'only' could be discussed…. As I guess it is not so simple.

Authors' response: An improvement of the text has been made, in order to clarify this point.

Short check if all conclusions are justified and supported by the results
Yes, there are justified and supported by the content of the text (not exactly 'results' in an opinion paper)

Recommendation
My recommendation = minor revisions needed

Reviewer # 2:

Short summary of the aim of the paper, its main findings and conclusions
The article addresses the importance of digitalization and its role for a broad integration of agroecology in agriculture. The authors have used 35 references for this purpose. In contrast to the effects of digitalisation for agriculture in terms of yield increase, cost reduction and an increase of efficiency, its role for agroecology is viewed critically. In a peer-to-peer process or in the Commons-based Peer Production Model the authors see the possibility of a redesign of management processes in agriculture and thus a stronger integration of agroecology.

The main topic of the article fits to the special issue, although it does not deal with approaches of agroecology per se, but considers the possibility of integrating agroecology in general.

General comments
In the first part of the article are listed a number of arguments which represent different points of view. However, these are only presented. An explanation or interpretation of arguments are missing. The arguments are not evaluated in their importance, pro and contra are only listed. From line 82 onwards, a stronger discussion of the topic becomes visible. The conclusions (lines 112 - 118) remain too general and do not reflect the different aspects of the problem addressed.

Authors' response: With regards the first part of the comment: we have chosen to use a paper structure, following journal's recommendations and limits, where initially the controversial positions of stakeholders' discussion are presented, so to familiarize the reader with the non-consensus

existing on DiA and agroecology, in a clear manner possible. We avoided the very thorough interpretation or explanation of the different arguments as it could consume much text space and risk the paper's economy (balance and size), if meant to be done comprehensively. So, as stated in the text, our main scope is how to move beyond conflicting approaches and provide a pragmatic, transdisciplinary position on the issue.

With regards the last part of the comment (on the conclusions section): a reply is provided in a respective comment below

Detailed comments

- In lines 12-13 describe a three-stage process, although the term as such (Efficiency-Substitution-Redesign path) is only mentioned in line 18. In line 20 another approach (efficiency-oriented approach) is mentioned. It remains open to what extent these differ, although a difference is indicated.

Authors' response: An improvement of the text has been made to provide a clarification, considering as well the general comments of reviewer 1.

- In line 22 the term "Digitalisation in agriculture (DiA)" is introduced and brought in connection with "smart farming" or "digital agriculture", but without explaining the relation to each other, which would be important, since in the following only the term DiA is used.

Authors' response: An improvement in the text has been made to clarify the use of the term DiA. Specifically, for text's balance reasons, we use it as a collective term for the several concepts and forms (smart farming, digital agriculture etc) that express the introduction of digital technologies in agriculture.

- Digitalization is partly seen as critical (lines 36 - 38, 46 - 47 or 54 - 56, among others), but it is also seen as having a potential role (line 43, lines 82 - 85). A "user innovation process should be applied" (line 86) as solution of the conflict, without describing in detail how this works and to what extent this process differs from common participatory approaches.

Authors' response: Several additions and improvements have been made in order to meet the reviewer's requirements.

- "Thus it is highlighted…" written in line 62, that DiA "ignore any economic ...dependencies". On the one hand, who is it ignores these dependencies and on the other hand, it was previously emphasized that DiA is primarily focused on economic aspects such as increasing profits, efficiency. That is not comprehensible.

Authors' response: In improvement in the text has been made, to make more comprehensible the point of view, as stated in multiple references (Gkisakis et al., 2017; Higgins et al., 2017; Carolan 2018)

- Agroecology and digitalisation are both referred as disciplines (line71). This is true for the agroecology. Digitalisation is not a discipline, but rather a process.

Authors' response: An improvement/correction has been made.

- The internet is not a tool (line 77), it is an infrastructure. A platform, or web-site can be a tool, but not the internet as itself.

Authors' response: We have improved the text accordingly, by adding the proper wording. Specifically, internet is broadly perceived as a (media) technology (https://en.wikipedia.org/wiki/New_media).

- The paragraph (line 54) is not justified. Both paragraphs belong together, which "futhermore" in particular already indicates.

Authors' response: We have rephrased certain part of the two paragraphs in order to improve the text's flow.

- Not all references are cited correctly, e.g. 7 of the articles cited in the list of references are not in the text, 2 of the articles cited in the text are not in the list and for 3 citations either the year is wrong or it is another article of the same author.

Authors' response: All references have been double-checked and corrected as indicated by the reviewer. We would like to express our special apologies for this inconvenience.

- As already mentioned, the conclusions (lines 112 - 118) remain too general and do not reflect the different aspects of the problem addressed. "Digital innovations" are compared in their importance as driver with the "re-design of food systems". This has not been discussed in the article. On the other hand, the mentioned communicative processes as possible instruments in the transition process are no addressed.

Authors' response: An improvement of the conclusion section has been applied, following the indications of the reviewer, but with respect to the paper's text balance and size.

Scope of the specific issue
The article fits to the specific issue of the journal Landbauforschung, "Agroecology - Can we change our food systems?" although it does not deal with approaches of agroecology per se, but considers the possibility of an agroecological transition in general.
However in case of the title "digital innovations for...", it was expected that a definition of what is meant by "digital innovations" would be provided, this is missing.

Recommendation
I propose to reject the article for publication.

FINAL ACCEPT
Editor/Chief-Editor Landbauforschung
Landbauforschung: Accepted

We are pleased to inform you that **we've accepted your revised manuscript "Position Paper: Digital innovations for the agroecological transition: A user innovation and Commons-based approach"**, which you submitted to Landbauforschung – *Journal of Sustainable and Organic Agricultural Systems*. Both reviewers agreed with us that the manuscript has significantly improved and that the revisions had been fulfilled.