

## ***Interactive comment on “Soil: the great connector of our lives now and beyond COVID-19” by Rosa M. Poch et al.***

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We thank Referee#2 for his/her comments and considerations. You are right: our manuscript does not contain new scientific information, since it was intended as a Forum article. According to the SOIL policy, it "should stimulate an open debate by presenting new ideas and views of soil as part of the larger Earth system. As such, they must strive to be a point of departure for future work. Purely speculative contributions are discouraged."

It is true that the five strategies are not new. But we disagree about the little merit as a forum article, since we give reasons for them being useful (even crucial, to our understanding) to increase the resilience of societies in front of pandemics. After re-

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viewing several publications on the effects of COVID in different sectors (as agriculture, hydrology, economics, world trade, sociology...) the same arguments could be stated, saying that there is nothing "scientifically" new (unless we are dealing with the virus and disease itself, which are indeed new), but analysed from a different viewpoint. The statements at the end of the manuscript can be used as guidelines for policy proposals to mitigate the effects of pandemics, stressing the central role soils should have. We believe that these "well-known" truths have to be restated under the scope of COVID-19, in the same way e.g. the IPCC is repeating publication after publication that GHG emissions have to be reduced, and they are not blamed for not being new.

We also think that the possibility to publish this manuscript as forum paper in an open access, comprehensive and transversal journal as SOIL will be an added value, as you suggest, for the possibility to become a citable paper and also for the inputs of reviews and comments that will surely come from it. Another high point is the opportunity to bring new interdisciplinary research integrating urban development and agriculture sustainability.

The referee points out that "It is unclear whether the authors are referring primarily to the situation in higher income countries and/or large-scale farming or to small-scale farming in low-income countries; or perhaps to both? It would be helpful to be more specific and include comments on the issues relevant in these differing situations. Almost certainly the social and economic factors of importance will be different, though perhaps there are some generic points to be made."

A/ Thank you for this suggestion. Our comments are referring to generic situations, but indeed there are differences not only regarding high/low income countries, but also regarding urban/rural environments and different land tenure systems. We have enlarged this part giving examples of these contrasting environments:

"The food supply in urban environments relies on longer and more complex food chains than in rural ones. The main effect of the pandemic in urban environments has been the

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excessive increase of food prices and food shortages, mainly in low-income countries (Mukiibi, 2020; Competition Commission, 2020). In this situation, urban agriculture, which is already producing about 15-20% of the world's food supply (Lal, 2020b) is playing a critical role in cities with acute food shortages due to the COVID-19. Higher income urban environments are less affected and have undergone changes in food habits, as the increase of online food demand (Chang and Meyerhoefer, 2020). In rural areas of low-income countries, farmers are experiencing more severe problems, as difficulties to purchase seeds and fertilizers and to get produce to markets (World Farmers Organisation, 2020), besides financial barriers to access to credits. Some cases of illegal land clearing by companies while the locals were locked down have also been reported (Fox et al., 2020)."

A second suggestion of Referee#2 is that "The authors mention the common causes of soil degradation including "depletion of soil carbon and nutrients, increased erosion, overfertilization, soil salinization, soil pollution..." It would be helpful to comment on which of these is most likely in different situations. Even give a few examples; of course, these will not be exhaustive but would give some substance to the article, as opposed to rather vague generalities. Examples from specific regions or situations could be useful as early warning of potential dangers elsewhere."

A/ It is evident that COVID-19 is not generating all types of soil degradation in the short term, and it is uncertain -as we state in the manuscript- what will be the mid-long-term effects of the change in land use caused by the need of food production near cities. As you are suggesting, we have made explicit two consequences/problems of the pandemic on soils: pollution and lack of fertilisation:

"Perhaps the two main threats in the short term are soil pollution and nutrient depletion. Increase of urban agriculture is faced with the fact that contamination by heavy metals, organic pollutants, antibiotics, and petroleum products are among the major constraints limiting the use of urban soils for food production (Menefee and Hettiarachichi 2018). Moreover, there is evidence that the enormous quantity of disposable plastic

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gloves and face masks that get to the environment (soils and waters) could increase the accumulation of their related microplastics and fibers within a short time (Fadare and Okoffo, 2020; Aragaw, 2020). Another effect derives from the lack of access to fertilizers to small farmers in low-income countries, as it has already been reported in Thailand (Fox et al., 2020), which can easily lead to degradation by nutrient depletion."

The last suggestion of Referee#2 is the following: "The strategies to combat soil degradation (and wider impacts on ecosystems) are all well known, have been stated and discussed for decades but sadly, in many situations, have been either ignored or even reversed. It would be helpful if the authors mentioned some key barriers to their implementation and give some fresh ideas on ways of overcoming them. Are there any good examples that could be pointers for addressing these issues elsewhere?"

A/ It is true that the strategies that have been repeatedly proposed have many barriers that prevent their implementation, but it is out of this Forum article to focus on them since they are also well known. Regarding the solutions, even after the first submission of this manuscript, several initiatives have been reported around the world to improve the resilience of food supply regarding soils –the starting point. We have added a paragraph illustrating them:

"Several initiatives, since the onset of the pandemic and the beginning of food supply problems, have appeared around the world demonstrating that it is possible to improve food sovereignty thanks to the collaborative work of people. For instance, communities from Sabah (Malaysian Borneo), who are dependent on imports for 75% of their rice requirements are having problems sourcing rice from Vietnam and selling cash crops, have recovered their traditional practices and river culture to maintain their protein supply (Ong and Wilson, 2020). In Emilia Romagna (Italy), a region severely affected by the pandemic, farmer self-organisation has ensured the provision of local food making shorter chains (Diesner, 2020). Other initiatives, such as Slow Food Gardens in many countries in Africa, are strengthening rural small-scale producer communities and therefore ensuring food supply (Mukiibi, 2020)."

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