

Interactive comment on “Targeting the soil quality and soil health concepts when aiming for the United Nations Sustainable Development Goals and the EU Green Deal” by Antonello Bonfante et al.

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We thank this referee for his positive comments. His remarks on the paper were quite relevant and helped us to improve the clarity and scope of the text. 1. Line 91: We have added two references to proximal sensing. There are many but this one is particularly interesting as it relates to an East European joint study with US colleagues and considers soils in a landscape context. 2. Lines 112 and following: We have modified the text to show that our method to measure soil health is universal and applies to any soil at any time at any place. The referee is correct in stating that the Cornell protocol strat-

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ifies measurements by three texture classes and- important!- has separate frequency curves for the indicators for each class. We prefer a universal test for all soils resulting into comparable values rather than separate procedures for different texture classes. and we now state so clearly. We also feel that just distinguishing three texture classes does no justice to soil expertise that is available because there are major differences in soil behavior within each of these three very broad texture classes and that's why we present results for Italian soil series that provide much more info than just a texture class. We added a recent reference of Bouma (2020) that discusses use of soil data in models for those that want to read more about this. Next, we define soil quality in three ways for a given soil type, indicating the inherent character of the soil quality concept, showing a characteristic range of values for a given soil type, for different soils within regions and in the world at large, allowing comparisons among soils 3. Line 114 plus: We have explained the phenoforms in some more detail now. To establish a value for SH and SQ based on so-called and undefined "representative profiles" of soil survey interpretations is not as good as distinguishing several phenoforms of that particular soil that reflect effects of management because soil management can have significant effects on soil behavior while the name for the soil (the genoform) stays the same! Effects of management, as expressed by the phenoforms, strongly affect soil quality and cannot be ignored. The latter is important in our view and is now more clearly emphasized. This is illustrated in the presented figures of the Italian soil series. Of course, the examples are hypothetical and should in future be based on field research along the lines as presented by Sonneveld et al and Pulleman et al. 4. Line 194: equation (1) is OK. Soils with lower SH have lower Yw-phenoform/ Yw-ref. ratios, because soil degradation lowers Yw. Healthy soils have higher values. This corresponds with the tables. 5. A sentence is added mentioning the fact that soil production is directly related to economic aspects and a reference has been added. Also, we mention that once it has been shown that Yw is higher than Ya (the real yield) an analysis is needed to find out why this is the case and how management can be devised to overcome problems. A discussion of this is, however, beyond the scope of this paper as we mention in the

revised text. 6. Suggestions for changes in punctuation have been followed. Thanks.

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