

Interactive comment on “Short term recovery of soil physical, chemical, micro- and mesobiological functions in a new vineyard under organic farming” by E. A. C. Costantini et al.

Anonymous Referee #2

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I was pretty puzzled by the Constantini et al. manuscript. Despite a very interesting topic, I decided to reject the manuscript because 1) I could not decide if authors studied the soil resilience or soil quality nor soil health and because 2) the experimental design is not appropriate.

1) Confusion stands in the introduction because many concept are cited without choosing one. Soil quality and soil health are synonymously used but are not equal concept. Soil quality is still a debate but most studies refer to two different soil qualities as inherent and dynamic. The latter referring to dynamic properties influenced by crop management. The extent of measurable variations of each dynamic indicator depends

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of inherent soil properties. In the present study, soil are calcareous, therefore some dynamic indicators are more relevant than those used by authors (see Salomé et al. 2014 Ecological Indicators). For example, I do not understand why total CaCO₃ content is used as a dynamic indicator, because even if pH difference is significant, I don't think that a difference of 0.1-0.2 pH unit have an ecological relevance. Beyond this particular example, the selection of the different indicators should have been better justified to soil functions but also for the short term issues. Indeed, in Coll et al (2012, Applied Soil Ecology) used different indicators, and some have a delayed response after conversion while others are more sensitive to conversion.

2) The experimental design is difficult to understand. I don't understand why authors compared “old” and “new” vineyards because the two vineyards does not have same land use before plantation. More, the “new” and “old” vineyards have different soil and weed management which can drastically influenced the responses of indicators independently of compost application. I don't agree the pooling of grass covered and tilled inter row data because authors did not present their values nor the indicators. It is quite surprising that the grass cover has not influenced biological activities of soils. Authors claimed that organic practices have been used; by only compost application is succinctly described. I would expect copper application rates and a better description of practices to evaluate the traffic in the vineyards. In most studies, the organic C mineralization is estimated on larger time span, at least 3 days and if possible over 28 days. In the present study, mineralization is only measured during 1 day, but mineralization fluxes can occurred immediately after soil re humectation and does not reflect the real mineralization.

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