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Interactive comment on “Soil indicators to assess the effectiveness of restoration strategies in dryland ecosystems” by E. A. C. Costantini et al.

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Soil indicators to assess the effectiveness of restoration strategies in dryland ecosystems

General comments:

This quite interesting review article represents a good contribution to the knowledge of the Soil indicators to assess the effectiveness of restoration strategies in dryland ecosystems. Even if it is not exhaustive due to the tremendous extent of the subject

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the AAs got through, it is well organized and easy to read.

Specific comments:

The title of the paper is appropriate. Abstract is adequately representative as well as all the other parts of the review article. References are adequate but they should be completed with other references to give the readers the possibility to deepen the knowledge on particular aspect considered in the paper.

Overall, the MS can be accepted with minor revision. In particular:

Pag Line Specific comments and/or suggestions

6 4-6 However, restoration of degraded lands is more than the recovery of soil ability to support vegetation. This is always true but particularly in contaminated soils of dryland mining areas (Toktar M., Lo Papa G., F.E. Kozybayeva F.E., Dazzi (2016) - Ecological restoration in contaminated soils of Kokdzhon phosphate mining area (Zhambyl region, Kazakhstan). Ecological Engineering. 86, 1-4. <http://dx.doi.org/10.1016/j.ecoleng.2015.09.080>). In addition to biomass production, restoration

10 4-6 which can vary noticeably inside the same climatic region. This is particularly true in transitional eco-zones, such as in the Mediterranean biogeographical region that is characterized by a notable pedodiversity (Ibáñez et al., 2013) and where lands at high and low risk of desertification. (Ibáñez J.J., Zinck J.A., Dazzi C. (2013) - Soil geography and diversity of the European biogeographical regions. Geoderma 192, pp.142–153. . DOI: 10.1016/j.geoderma.2012.07.024)

10 10 It could be useful to add a footnote to define the soil moisture control section.

13 15 The same reference was reported two lines before.

17 20-22 Overall, in undisturbed soils, a clear stratification occurs, with larger SOC concentrations in shallower than that in deeper layers. In disturbed soils,

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the SOC stratification becomes blurred (Fig. 5), except for some particular cases of hyperarid anthropogenic soils (Camilli B., Dell'Abate M.T., Mocali S., Fabiani A., Dazzi C. 2016 - Evolution of organic carbon pools and microbial diversity in hyperarid anthropogenic soils. *Journal of Arid Environments* 124, 318-331. <http://dx.doi.org/10.1016/j.jaridenv.2015.09.003>)

19 18-19 The analysis of the soil-extracted nucleic acid sequences (DNA and RNA) provides a powerful tool for the characterization of the entire microbial community. It was successfully used even in hypersaline soils of dry areas (Canfora et al., 2014; Canfora et al., 2015).

Canfora L., Bacci G., Pinzari F., Lo Papa G., Dazzi C., Benedetti A. (2014) – Salinity and bacterial diversity : to what extent does the concentration of salt affect the bacterial community in a saline soil? *PLoS ONE* 9(9) ; e106662. doi: 10.1371/journal.pone.0106662

Canfora L., Lo Papa G., Vittori Antisari L., Bazan G., Dazzi C., Benedetti A. (2015) - Spatial microbial community structure and biodiversity analysis in “extreme” hypersaline soils of a semiarid Mediterranean area. *Applied Soil Ecology* ; ISSN: 09291393 ; DOI: 10.1016/j.apsoil.2015.04.014

39 Fig 1 Fig. 1 needs an accurate description in the caption

43 Fig 5 What about y-axis?

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/7/C1782/2016/sed-7-C1782-2016-supplement.pdf>

Interactive comment on *Solid Earth Discuss.*, 7, 3645, 2015.

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