

Interactive comment on “Ecological soil quality affected by land use and management on semi-arid Crete” by J. P. van Leeuwen et al.

Anonymous Referee #1

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The manuscript “Ecological soil quality affected by land use and management” analyzed the effect of physical, chemical and biological parameters in soils in different land uses. The experimental design does not permit to understand at which parameters can be correlated the found values. The results are not innovative because they confirm the use of some parameters as indicator for ecological soil quality, that are largely used. The main difference with previous studies is the ratio of fungal to bacterial biomass, which is frequently proposed as indicator for C sequestration and disturbance. But in this case, due to experimental design is not possible give a clear statement on this indicator (The results could be affected by many parameters no considered in the experimental design, and therefore this difference does not exist) Below other suggestions

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1)The first part of introduction is too general; in the introduction miss the state of art regarding studies on ecological soil quality and land use/land management 2)In mat and met there are some sentence that are repeated in the introduction: i.e. “Crete represents Mediterranean soils under imminent threat of desertification” and “The aim of the present study is to investigate soil quality at the Koiliaris CZO sites in Crete (Greece) that are considered to be at risk of potential soil degradation and desertification.”

3) I suggest to add a map with the distance between sites. The main problem is the distance between the sites. Why do you have not use the same land uses in each site?

4) Page 191 line 120-123 Delete this sentence. It is not mat and met

5) Line 2 and 4 page 192 . How was litter removed ? Leaves? Or Prune residues? Which is the density of trees?

6) Chapter 2.2 Not clear the sampling depth 7) Chapter 3.1 Delete : “To quantify soil structure, we measured the water stability of soil aggregates (WSA).”

8) Chapter 3.1 . To better understanding the difference of TN , could be important to have some information about fertilization. (Add it in M and M)

9) The figure 1 is a repetition of the table 2 . Delete the figure 1

10) How do you transform TOC in kh ha⁻¹? Have you measured Bulk density? Add this information and the values of bulk density for all sites in the table 2

11) Delete in the discussion the following sentences: The aim of the present study was to investigate ecological soil quality in southern Euro-5 pean soils that are at risk of potential soil degradation and desertification. In addition,we identified whether the currently used ecological soil quality parameters are adequateto assess soil quality under harsh conditions.

12) After the first time, use always wsa for water stability of soil aggregates

13) Discussion should be improved: (1)Consider the rainfall to discuss SOM param-

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eters; (ii)The difference of SOC can be attributed to rainfall/land management ; (iii)
Relation between SOC/ TOC and C/N inputs. (iv) different litter composition

14) Chapter 4 Delete this sentence : The aim of the present study was to investigate
ecological soil quality” It regards objective (introduction)

15) Again table 3 and figure 3 contain the same values.

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