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Title: "Conventional tillage vs. organic farming in relation to soil organic carbon stock in olive groves in Mediterranean rangelands (Southern Spain)"

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Specific comments:

Page 36

Line 20 Substitute "The olive oil production" with "Currently, the olive oil production".

Lines 22-25 Move the sentence "In Spain ... (Louwagie et al.,2011)" before "The olive production in Andalusia...".

Page 37

Line 3 Substitute "several tillage" with "tillage" or "mechanical tillage".

Line 4 What decades? I suggest substituting "For decades" with "Traditionally".

Line 6 Substitute "OG" with "OGs".

Lines 7-8 Substitute "CT contributed to the nitrogen cycle variation" with "CT has contributed to alterations in the nitrogen cycle".

Line 11 Re-write "Traditional management of OGs"

Line 12 Delete "bring on".

Line 13 "Affecting to climate change" is not clear. May be "contributing to climate change". However, try to provide some details on the effect of traditional management practices on climate change.

Line 14 Substitute the ellipsis ("...") with a comma.

Line 19 Re-write: "may improve soil quality".

Lines 22-25 Something is missing in this sentence. Please, check.

Page 38

Line 2 Re-write: "stored in deep layers".

Line 3 Re-write: "soil horizons ...".

Line 5 Re-write: "affect accumulation ...".

Line 6 Re-write: "Thus, SOC might not be ...".

However, the link between this and the previous statement is not clear. If Mediterranean climate conditions limit accumulation of SOC, SOC looks a good index. Can you explain why SOC is a worst index than the SR? Perhaps (just a speculation) mineralization rates vary in depth?
You discuss this in the following lines, perhaps you just need to connect both texts.

Line 9 Re-write: "The use of the SR index, ...".

Line 17 Substitute the semicolon (;) with a colon (:).

Line 26 Substitute "that" with "where".

Line 26 Are these extreme temperatures or mean monthly temperatures, mean daily and minimum and maximum temperatures or what?
following

Page 39

Line 4 Re-write: "long drought periods"

Line 5 If 400 mm per year, add "per year". Is this an average value?

Separate "The relief..." in a different paragraph.

Line 8 Substitute “are also available” with “can be also found” or a similar text.
Line 9 Re-write: “... were selected for this study”.
Line 10 Delete the reference.
Line 13 Just a suggestion: if available, add the amount of animal manure per decade.
Line 24 Did you collect the complete soil column or representative horizon samples? If
and line 26 you did this, explain or cite a methodology (may be the following, for example:
FAO: Guidelines for soil description, Food and Agriculture Organization of the
United Nations, Rome, Italy, 2006).
Line 25 Substitute “lower” with “smaller”.
Lines 26-28 I do not understand what you mean with “profiles recognition”.

Page 40

Line 1 I suppose you selected trees in CT and OF areas, didn't you?
Lines 3-6 I do not understand this paragraph.
Line 7 Re-write: “samples”.
Dry- or wet-sieving?
Line 8 Re-write: “Four replicates of each sample were analysed in the laboratory”.
Line 9 Substitute “replications” with “replicates”.
Line 12 Re-write: “Physical and chemical horizon properties for each...”.
Line 13 May be obvious to you, but did you check the normal distribution of data prior
to parametric analyses (Pearson's correlations and ANOVA) or PCA? Move
“The Anderson-Darling normality test...” to this point.
Line 15 Substitute “was done” with “was carried out”.
Lines 17-18 Delete “for each parameter”.
Line 18 Use parentheses for “ $p < 0.05$ ”.

Page 41

Lines 4-8 Re-write: “The studied soils show different morphological, physical and
chemical features according topography, physiographic location parent
material and climate”. Delete “The studied soils exhibited differences in some
physical and chemical properties”
Line 9 Here and in the following lines: methods do not explain how soil depth was
defined in this experiment. For example: is 88 cm in CT LVs the distance from
the surface to the C horizon or to the unweathered material?
Line 9 Delete “Generally, all studied soils ... of sands” or use this to mention general
properties in a new initial statement together with other general properties.
Otherwise, it looks like you are talking about LV with > 80% sand.
However, substitute “sands” with “sand”.
Lines 10-11 You wrote: “From an analytical point of view (Table 2 and Table 3) LV were
characterized by high cation exchange capacity (CEC) ($> 25 \text{ cmolkg}^{-1}$)”. Later,
you add more details. This sounds strange, as CEC is not the main “analytical”
feature of LVs.
Lines 14-18 I suggest re-writing:
On average, depth of studied LVs was 88 (CT) or 140 cm (OF). These soils
showed a low proportion of coarse particles (<2.2%), and relative high clay
proportion in Bt horizons (39.6% in CT vs. 30.2% in OF), in contrast to other
more coarsely textured studied soils. Analytical results (Table 2 and Table 3)
show that studied LVs are characterized by cation exchange capacity (CEC) $> 25 \text{ cmolkg}^{-1}$.”

Something is missing in the statement “Normally all soil types having an acid
pH (5.3–6.7) to the exception of RG-CT (7.3–7.4) and moderated or saturated

base saturation (BS) 15 (100–77.3%), mainly calcium, to the exception of LV (77.3–35.7%); normal values of total nitrogen (TN) in LP and RG (0.17% A-horizon in RG-OF; 0.04% C-horizon in LP-CT) and lower in CM and LV (0.13% A-horizon in CM-OF; 0.02% B-horizon in LVCT)". Can you re-write?

- “Normal” values of nitrogen is confusing. Do you mean “average”?
- Line 18 The principal characteristic of these soils was ...”. What soils?
- Line 19 Re-write: “Sand proportion increased in CT, LV, RG and LP under OF respect to soils under CT”.
- Line 20 Finish the previous sentence with a final dot and delete “, however,”.
- Lines 21-22 Re-write: “SOC content was generally low in all studied soils, although the SOC decrease in depth was much more intense in CT soils.
- Line 22 Delete “In addition”.
- Line 25 What does “PCA was first applied using...”?
- Lines 26-27 Check: “Some variables relationship between us...”.
Between “us”?
Relationships are for people. Relations are for things.

Page 42

- Line 1 Here and in other parts of the text: “ $p < 0.001$; $r = 0.997$, -0.810 , -0.753 , 0.662 , 0.629 and 0.624 respectively”, or add the Pearson coefficient immediately after each pair of variables between parentheses.
- Line 2 Re-write: “relations”.
I suggest using slashes (“/”) instead of “and” to write a sentence less wordy.
- Lines 12-14 Re-write: “Since very strong and strong correlations were found (Table 4), it was necessary to identify critical factors determining land development in the Los Pedroches Valley using PCA”.
- Do you mean “land development” or “soil development”?
- Lines 14-15 Re-write: “Fifteen physical and chemical soil properties were included in the PCA, and four factors (eigenvalue > 3) were identified”.
- Line 16 Avoid the first person (“we”).
- Line 26 Delete “To reduce and explained ... scatterplot”.

Page 43

- Line 1 Substitute “indicated” with “shows”.
- Line 9 Who or what presents a behaviour trend respect to PC2?
- Line 14 Re-write: “SOC and TN concentrations ...”.
- Lines 14-15 Re-write: “In OF, SOC and TE contents increased in the A horizons of all soil types respcet to...”.
- Line 17 Re-write: “heterogeneous, ranging”
- Line 20 Here and through the text: I suggest using expressions as “CT-soils” or “OF-soils” instead of CT and OF when you are talking about soils under different management types, not only management types.
- Line 25 TN has been used for “total nitrogen” (page 41, line 16). So, what does “total TN (T-TN)” mean? Why not using “N” instead of “TN” for nitrogen?
- Line 26 Re-write: “CM, LP and RG under OF”.

Page 44

- Line 3 Delete “To correlating SOC content with the soil variables”.
- Line 4 Separate “similar” in a new sentence, not with a comma. Substitute “), similar” with “). A similar”.

- Line 5 Enlose "in this case" between commas.
- Lines 9-10 Substitute "Equally were found correlations between SOC and other soil parameters in the surface horizon" with "Similarly, correlations between SOC and other soil parameters in the surface horizon were found".
- Line 10 Re-write: "strongly correlated".
- Line 13 Re-write: "moderately correlated".
- Line 15 Do not use abbreviations in titles.
- Line 16 Re-write: "the influence of management on".
I suggest "SOCS", not "SOC-S", and "total SOCS", not "T-SOC-S". However, the excessive use of abbreviation is not good. Try to read again page 44, for example. I find that the number of abbreviations is excessive.
- Line 19 Re-write: "Significant differences between SOC-S under different management types have been found in all studied soils".
- Line 26 Re-write: "Tables 2 and 3".
- Page 45
- Lines 3-5 Re-write: "Significant differences among horizons and soil types ($p < 0.05$) were found when the Ah horizon of LPs was not included in the analysis of management systems".
Try to revise the full paragraph.
- Line 18 Delete "In the study soils".
- Line 26 In top soil?
- Page 46
- Lines 14-16 I am not in agreement with this statement. However, Porta et al. (2003) is a too general document to support this specific issue. Try to be more specific with the reference (author of the chapter, chapter and pages) or delete.
High natural erosion rates and anthropic erosion in the historical times are much more important items.
- Line 25 and following Please, re-write, as you are talking about studied CM, RG and LP. Saying that these soils are characterized by low fertility may be hard to support in some cases, as you perfectly know in your own area. Weak horizonation does not mean low fertility. Here, you are talking about studied CM, RG and LP.
- Line 13 Substitute "line" with "sense".
OF is a key factor for long-term what?
- Lines 13-14 Re-write: "environment-friendly".
- Line 15 Re-write: "According to the PCA results, factors affecting soil development in the study area were".
- Line 19 Delete "presence".
- Lines 20-22 Re-write the sentence "According to this...".
- Line 25 Re-write "However, high tree density may affect SOC content (González et al., 2012). This is in agreement with
- Line 27 Re-write: "The PCA results showed that sand content (PC2) is a key factor that may affect soil development in the Los Pedroches Valley. In agreement with this, Hontoria et al. (2004) suggested...".
- Page 48
- Line 1 Substitute "that affect" with "affecting".
- Lines 2-4 I think this reference supports this statement only for soils studied by Castro et al. (2008). However, they review some of these aspects in their introduction. Some of the main ideas and papers are cited there.
- Lines 5-6 Re-write: "The ANOVA found significant differences between...".

Line 14 Re-write: "Castro et al. (2008) observed a similar trend at different depths in soils from OGs".
Line 15 Re-write: "low OM inputs".
Re-write: "low vegetation cover".
Line 16 Substitute "...in OG minimize ... sandy soils..." with "...limit the incorporation of organic residues and enhances soil erosion risk in OG"
Line 22 Re-write: "concludes".
Line 23 Re-write: "the upper".
Lines 23-24 Substitute "superficial" with "surface".

Page 49

Line 1 Substitute "parameters, this coincides" with "parameters. This is in agreement with"
Line 2 Delete "exposed by".
Line 3 Substitute "to the soils development" with "to soil development".
Lines 4-16 This paragraph basically repeats results. I suggest re-writing in a more simple style and shorten the paragraph.
Lines 17-18 Re-write: "was higher in CM and LV under OF than under CT. This is in according to Blanco-Canqui and Lal".
Line 20 This is not clear. What do you mean with "decomposed OM"?
Lines 25-27 Re-write: "In contrast, an opposite trend was observed in soils under CT, what may be attributed to...".

Page 50

Line 2 Introduce with "On average, T-SOCS-S for main soil groups ...".
Something is missing in the sentence, however. Can you check?

Page 51

Line 11 Re-write: "between 1.1 and 1.9" and "between 2.1 and 4.1".
Line 19 Re-write: "suggests that".
Lines 24-25 Delete. Your study is not necessary to confirm this well-known process. The strong issues in your study are others.

Page 51

Line 1 Re-write: "good soil quality".