



Comment on soil-2021-32

Anonymous Referee #1

Referee comment on "Spatial patterns of argan-tree influence on soil quality of intertree areas in open woodlands of South Morocco" by Mario Kirchhoff et al., SOIL Discuss., <https://doi.org/10.5194/soil-2021-32-RC1>, 2021

GENERAL COMMENTS

The manuscript ID soil-2021-32 shows interesting results from an empirical study carried out in southern Morocco that compares values of soil quality between different spatial areas previously dominated by argan trees. From a formal point of view, the article is quite well-written (although not well-structured in the M&M section), the methodology is consistent, conclusions are supported by its results and the literature background is relatively wide. Regarding novelty, the most interesting of this research is the provision of data from a geographical area not deeply studied yet. In addition, authors have made a remarkable effort in fieldwork and analysing data. So, I am going to suggest authors make some changes aimed at improving the rigor and quality of the manuscript previous to suggest my acceptance. Please see below my specific comments. I hope they can be helpful. Of course, my good feeling with this manuscript maybe is not shared by the opinions expressed both by other reviewer(s) and editor(s). In other words, it is just my opinion on this research/article.

SPECIFIC COMMENTS

Title

Soil quality is much more than the simple use of some parameters. I am not 100% sure if soil quality is the right concept to be included in the title. When a regular reader reads soil quality he/she probably thinks about the use of indicators, indexes, assessment systems, etc. Anyway, it is a personal decision that must be made by the authors. I have only expressed my opinion about it.

Abstract

This section should be composed by a single and compact paragraph. Perhaps the guidelines of the journal ask for using a paragraph for each idea (motivation, methodology, outstanding results, and main conclusion). In that case, please follow the guidelines but I prefer the traditional way.

Lines 9-10 (motivation): In my opinion, this sentence is quite logical and obvious, except in overgrazed areas (litter remotion) or in particular cases. Bare soil surfaces usually tend

to reduce soil quality in comparison with nearby tree-influenced areas. Please rewrite or remove it.

Lines 13-14 (methodology): Please provide information about the maximum distance from the trunk where you collected soil samples. For instance, I know works in which authors have detected influence of trees on soil nutrient contents at a distance of 8 m from the trunk (open area).

Line 15: Soil moisture? At field capacity? When have you measured it? Please mention it.

Line 18: I suggest using SOC instead of C-org and "and" instead of "&" (throughout the text). I think it is more rigorous.

Lines 18-23: I miss some brief information about the sampling plots, i.e. to know which kind of areas have been compared since I only know some properties have been assessed in 385 points following transects around the argan-trees.

Line 25: Along with reforestation I think measures to prevent overgrazing, illegal firewood extraction, etc. should be also mentioned as friendly solutions.

Introduction

The length of this section could be reduced.

Broadly speaking, this section is well-written and organized and it is easy to read and understand. It follows a logical order touching every point interesting for this kind of studies. Regarding literature (and its citations), in my opinion, authors have cited too many references to support each idea and I have missed some important references of works made in similar areas. Nevertheless, it is something personal and authors must feel free to use those references they consider pertinent. Anyway, citations must be sorted in alphabetical or in temporal order. None of them has been respected.

Lines 42-45: This paragraph is too short. Please think also about the reading of the manuscript.

Line 43: agro? Please provide more details. I guess some cereals are temporally cropped in this kind of land systems.

Figure 1 is wonderful but I think figures should not be presented in an Introduction section. Perhaps it could be moved to the M&M section and sampling points could be also drawn.

Material and methods

I suggest call this section as Material and methods instead of Material & Methods.

This section should be fully restructured. Please see below some of my comments.

Experimental design must be perfectly explained. I have had to read several times this section to understand this. A regular reader will only read once and he/she must understand it after the first reading. Please concentrate your effort to improve this weakness.

Study areas

I suggest rename this subsection as Study areas since you have studied three sites.

This subsection is too long. Please try to be more concise only highlighting the information is really relevant for this research.

Figure 2 should be placed at the bottom of this subsection. A new data frame on the corner including whole Morocco and where the areas are could enrich the figure.

Please use international units properly (e.g., 30°C)

In my opinion, Figure 3 and Table 1 are superfluous. They can be useful but they are not necessary for a research manuscript in which the capacity of summarize contents is crucial. I guess the journal provides the opportunity of using supplementary materials.

Lines 129-132: It forms part of your experimental design. In fact, perhaps you should write a new subsection called Experimental design in which you can add the figure 1, your sampling strategy, etc.

Methods

I totally disagree with the name of this subsection as well as with its subdivision in extra and unnecessary sub-subsections (2.2.x. level). Please restructure your entire M&M section in logical and standard subsections, i.e., use only 2 and 2.x levels.

Soil sampling and analyses should be your third subsection.

Figure 4: The experimental design is well-thought. You have collected grosso modo 13 samples per tree and you have surveyed 30 trees. It is robust. Well-done!

How many samples have you collected in each one of the three areas: 10 trees per tree areas plus inter-trees area?

Results

I am quite satisfied with this section. So, I have no comments that can be useful in this matter. The only thing that I suggest some modifications is regarding tables. They could be more standard (no colours, etc.). From a visual point of view I do not like them. It is just an aesthetical suggestion.

Line 223: Tables should be placed below the paragraphs in which they are mentioned not above.

Line 248: Why have you measured Kh only in 19 sites? It is just for curiosity. It does not mean the study is not rigorous.

Discussion

In my opinion, the content of this section and the logical order of its writing as well as the most of the references used are appropriated. I have missed some pertinent references that could be quoted but I am not going to suggest any specific work. It is a task that corresponds exclusively to authors.

Line 352: There is no information about the 30 trees selected in any part of the text. If you have measured some variables about them it would be great if is shown in the text or as supplementary material.

Line 367: I have assessed some reforestations in northern Africa and I am very skeptical about their success. I think measures to prevent degradations are more effective.

Line 370: Do you 100% agree with this sentence? How can we change micro-climates?
Please be more "prudent" in this kind of sentences.

Conclusion

I agree with the content expressed in this section but I think it should not be a simple summary of your results as the first part is. Anyway, it is well-written.