

Dear Reviewer,

We really appreciate your interest in our paper and the time you spent. We have carefully reviewed your comments which have greatly improved the manuscript. The changes made are presented below.

Best regards,
Nicolás Riveras-Muñoz on behalf of all co-authors

Review Report Form

Open Review

- ☐ I would not like to sign my review report
☒ I would like to sign my review report

English language and style

- ☐ Extensive editing of English language and style required
☐ Moderate English changes required
☐ English language and style are fine/minor spell check required
☒ I don't feel qualified to judge about the English language and style

	Yes	Can be improved	Must be improved	Not applicable
Does the introduction provide sufficient background and include all relevant references?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all the cited references relevant to the research?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the research design appropriate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are the methods adequately described?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the results clearly presented?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the conclusions supported by the results?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comments and Suggestions for Authors

I appreciate the interesting location and the pedological assessment. The paper has several significant formal flaws. Please use only SI units in the article (do not use "Mg"; or "cm"). The text is not properly divided into chapters. Evaluation of the influence of mechanization is unacceptable. Their technical parameters determine the influence of tires on soil properties. The design of your observation does not allow this! The terms "in-the-wheel-track (IT)" and "outside-the-wheel-track" (OT) are unacceptable. You can replace "places with frequent crossing" and "places without crossing".

Dear reviewer, “Mg” and “cm” corresponds to SI units and are formed with the base unit plus a prefix that indicate “10 to the power of n times” and are used to avoid the writing of very long numbers.

Abstract:

It is not clear what new things you have discovered.

Two sentences have been included to stress the findings **in the abstract**: “...A linear relationship was found between K and R, explaining differences between high and low PR sites. There was an association between K_{sat} with position (subsoil/topsoil) and PR (high/low) which may allow using PR as a proxy for K.”

Line 12: “intensive tillage” - replace “intensive”.

Thank you so much, it has **been replaced for “conventional tillage”**.

Introduction:

Line 34: “other Mediterranean regions”, what do you mean by “other”? “Mediterranean” - this term is used to refer to the region around the Mediterranean Sea. Consider replacing this term in both the text and the title. It will be good to avoid confusion.

The name comes from the Mediterranean Sea but is applied to other regions that share characteristics (mostly climatic, but with a long-term influence in vegetation and soil, among other thing) as California, Australia or as in this case, Chile. So, we decided to keep it due to that is the way how is referred in other publications of the same project.

Line 75 “excessive tillage” - how do you understand the term “excessive”?

Dear reviewer, we took this comment into account. The concept has been **changed to “long-term repeated tillage” to improve the comprehension of the text**.

Define hypotheses. It is not clear what you expect. The title shows that you want to evaluate the variability of selected properties. Please include it in the hypotheses. Considering your methodology, goal (i) is unacceptable.

The hypothesis has been rephased to: “...in a coarse textured soil under long-term tillage and maize monoculture, the penetration resistance and its spatial distribution are directly related to the hydraulic conductivity and hydrophobicity of the soil.” **Goal (i) has been changed to** “...to quantify the mechanical resistance of the soil and its distribution both vertically and horizontally in areas of high and low mechanical resistance, places with frequent crossing and places without crossing of machinery, as at the topsoil and subsoil...”

Materials and Methods:

Lines 109 – 110: It is necessary to describe the entire technology of growing corn.

Thanks for the comment; a detailed description of the management has been included between lines 108 – 113, including plowing, irrigation, fertilization, and the timespan when it was done.

Line 112: You cannot prove this. If you don't use GPS navigation and even then, it's questionable.

Dear reviewer, thanks for the feedback, we agree on that, and we appreciate the suggested way to modify it, so we incorporate it. We described the treatments as “places with frequent crossing of machinery (+M) and places without crossing (-M).”

Results and Discussion:

I recommend dividing it into two chapters.

Dear reviewer, thanks for the comment. We decided to consider your suggestion, and we separated the Results and Discussion into two chapters. We kept the content, and we added some additional sentences to make the independent parts coherent by themselves.

The text blurs the differences between your results and the quoted data.

We hope to accomplish this comment by separating the text as indicated before.

Conclusions:

Write only your most important findings!

Interpretations not directly related to our results has been removed.

Line 511 – 512: "This directly affects soil functionality, limiting the ability of the roots to reach water and nutrients, reducing maize yields, but this effect could be eliminated through deep ploughing." - are these your results?

Thank you so much for the comment. As it is not part of the results, it has been removed to avoid misinterpretation.

English errors:

Line 40: ..making difficult an straightforward comparisons.. A straightforward.

The comment has been included.

Submission Date

25 August 2022

Date of this review

07 Sep 2022 17:29:56