

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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all the cited references relevant to the research?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the research design appropriate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the methods adequately described?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the results clearly presented?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the conclusions supported by the results?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments and Suggestions for Authors

The reviewed manuscript concerns the variability of the basic soil properties (mechanical composition, soil bulk density, organic matter content) as well as soil hydraulic conductivity and water repellency index. Measured values of soil penetration resistance were used for establishing four treatments (measuring points) where soil properties were measured. The study was conducted on coarse-textured Inceptisol on a farm in central Chile, in a fallow-maize rotation under conventional tillage. The results of measured data were analyzed using statistical methods (kriging, ANOVA, regression). **The reviewed manuscript is thematically appropriate for "Soil Systems" journal. The manuscript is well written and the overall layout of the work is correct and legible. The**

introduction provides sufficient background and supports the research topic of the study. The description of the research methodology used is accurate, however requires some additional information. Discussion is well written and conclusions presented are result from the conducted research and analysis

Comments (suggestions):

In Fig.1 and 2 please add scale of the map. **On Fig. 2 please mark location “four treatments”**

Figures has been updated with the suggested changes.

Please clarified how many samples were used for determination of mechanical composition, BD, OM and R. Line 128 – 32 samples for hydraulic conductivity, how many samples were used for other characteristics?

It was rewritten to improve readability as: “In each PR zone, K was measured on the field for all four treatments with four replicates ($n = 32$). Complementary to each K measurement were collected undisturbed soil cylinders (height = 5 cm, diameter = 5.9 cm, volume = 136.7 cm^3) for the determination of hydrophobicity, disturbed soil samples at depths of 0 – 10 cm and 30 – 40 cm, and three disturbed cylinders for BD.” To summarize, $n = 32$ for all (BD are composite samples).

Line 185 – please add reference for Surfer 10, please specified what type of kriging was used for interpolation.

The interpolation was done again in R to improve the reproducibility of the analysis using ordinary kriging (as in the previous version).

Line 207 – please add reference for R package.

The comment has been included.

Please specified the median value of PR which was used for division of PR into high and low class. I cannot find what does it mean high and low PR values.

It was added in the method as median and is the cut-off threshold of the intervals in the results section (median = 485000 Pa).

For me caption of Fig. 2 is not clear. I do not see “Average areas”.

Has been changed to “Average values”.

What type ANOVA was used for the analysis of the data? One-way? Why not 3-way (zone, treatment, position)?

This has been a very valuable comment! Originally was a 1-way ANOVA for each factor, but thanks to your suggestion, I ran the models again as 3-way ANOVA and the factors turned out to be significant, thank you very much.

In table 1 results of ANOVA analysis are presented as average values and SD. Why not 95% interval? The detection of the existence of the significant differences in Table 1 is not very clear to me (some letters are italic bold, some not).

It can be presented as 95% intervals as an alternative, but to fit the information inside the table, we decided for a traditional mean \pm sd. The italic/bold letter was just a formatting mistake.

In Fig 6 – symbols OWT and WT should be explained (or changed).

The symbols had been homogenized, now OWT/OT (out-of-the-wheel-track) and IWT/IT (in-the-wheel-track) has been replaced in the whole manuscript to its relative position to the machinery crossing (+M/-M).

In my opinion “Soil water pressure” should be presented as negative values (suction).

Dear reviewer, we agree with your comment. The term has been homogenized to suction throughout the text to avoid confusion.

When you citated paper whit 3 and mor authors please use Author et al. (for example lines 312, 331 and more, please check this).

The comment has been included.

In Keywords instead of hydrophobicity please use repellency index.

The comment has been included.

Submission Date

25 August 2022

Date of this review

06 Sep 2022 23:25:45