Dear Jose Alfonso Gomez,

thank you very much for your final comments and suggestions. We have revised the manuscript accordingly, explicitly stating in the text what is covered by our experiments and what is not. We have also highlighted the limitations of the study and amended the conclusion accordingly.

The lines given below correspond to the changes shown in the manuscript with tracked changes.

Kind regard,

Frederic Leuther and co-authors

1- Be a bit more explicit in restricting conclusions be more explicitly restricted to the investigated loam soil, avoiding broader generalization to other soil textures for which theres is not, yet, available experimental evidence.

We revised the conclusion to more explicitly restrict our findings to the investigated loamy soil and to avoid unsupported generalization to other soil textures. Specifically, we consistently refer to the "studied loamy soil" and "conditions investigated," softened some statements regarding broader applicability, and added a statement emphasizing that extrapolation of the observed effects to soils with contrasting textures requires further experimental verification. (Lines 520 – 522)

2- In sections where there are interpretations related to pore architecture, residue-soil interfaces, and structural changes, these should be indicated more clearly as hypotheses or inferences derived from the observations, instead of demonstrated mechanisms, since there are no direct measurements of these structural changes.

We revised the discussion sections to more clearly distinguish between observations and inferred mechanisms by using more cautious wording and providing additional references when discussing pore architecture, residue-soil interfaces, and structural changes. In addition, we explicitly acknowledge that these interpretations are not based on direct structural measurements and note that techniques such as X-ray Computed Tomography would be needed to verify the proposed mechanisms. (Lines 345 – 350, 366 – 370, 389 – 390, 493 – 496, 503 – 505)

3- The discussion of the field applicability could be strengthened by acknowledging more explicitly that processes such as preferential flow, aggregate turnover, biological activity, climatic variability, and spatial heterogeneity may alter residue effects under field conditions as compared to those presented under controlled conditions in this manuscript.

We also expanded the discussion of field applicability by acknowledging that processes such as cropping system and soil management, preferential flow, aggregate turnover, biological activity, climatic variability, and spatial heterogeneity in crop residue quantity and quality as well as soil characteristics may alter crop residue effects under field conditions compared to the controlled laboratory conditions investigated in this study. Consequently, we further clarified the limitations of extrapolating our findings beyond the experimental setup. (Lines 471 – 474)