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Peer-reviewed journal articles

2026

1. Minich, L.I., Beem-Miller, J., Mittelbach, B.V.A., Geissbühler, D., Udke, A., Wasner, D., Duborgel, M.M., McMackin, C., Brunmayr, A.S., Wacker, L., Gautschi, P., Haghypour, N., Egli, M., Leifeld, J., Eglinton, T.I., Hagedorn, F., 2026. A radiocarbon-based framework to assess soil organic carbon persistence and vulnerability across land-use types. *Global Change Biology* 32, no. 3: e70799.
2. Robinson, D.A., Fendrich, A., Thomas, A., Reinsch, S., Leifeld, J., Moore, T., Seward, J., Borrelli, P., Balabio, C., Panagos, P., 2026. Soil porosity prediction across Europe with a focus on soil particle density determination. *International Soil and Water Conservation Research*, 100614
3. Walz, I.L., Dittmann, M., Leifeld, J., 2026. Recovery and composition of biochar after feeding to cattle. *Biochar* 8, article 13.
4. Minich, L.I., Geissbühler, D., Tobler, S., Udke, A., Brunmayr, A.S., Moreno Duborgel, M., McMackin, C., Wacker, L., Gautschi, P., Haghypour, N., Egli, M., Kahmen, A., Leifeld, J., Eglinton, T.I., Hagedorn, F., 2026. Conceptualising carbon cycling pathways across different land-use types based on rates and ages of soil-respired CO₂. *Biogeosciences* 23: 811-829.
5. Widmer, A., Tamagni, L., Wüst-Galley, C., Paul, S., Jocher, M., Volpe, V., Doetterl, S., Keller, T., Leifeld, J., 2026. Mitigating greenhouse gas emissions of a managed organic soil by paddy rice cultivation in the cool temperate zone. *Agriculture, Ecosystems & Environment* 399: 110146.

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6. Temmink, R.J.M., Lång, K., Vroom, R.J.E., Leifeld, J., Fritz, C., Zeug, W., Thrän, D., Kleinspehn, C., Gaudig, G., Neubert, J., Kreyling, J., Rhymes, J.M., Evans, C.D., Kotowski, W., Nordt, A., Tanneberger, F., 2026. Agriculture on wet peatlands: the sustainability potential of paludiculture. *Agricultural Systems* 231: 104561.
7. Schmidt, H.-P., Abiven, S., Cowie, A., Glaser, B., Joseph, S., Kammann, C., Lehmann, J., Leifeld, J., Pan, G., Rasse, D., Rumpel, C., Woolf, D., Zimmerman, A.R., Hagemann, N., 2025. Biochar permanence—a policy commentary. *GCB Bioenergy* 17: e70092.
8. Reinsch, S., Lebron, I., de Jonge, L.W., Weber, P.L., Norgaard, T., Arthur, E., Gomes, L., Pesch, C., Konstantinos, K., Zalidis, G., Epelde, L., Romić, M., Romić, D., Zovko, M., Reljic, M., Heikkinen, J., Feeney, C., Bentley, L., Levy, P., Vanguelova, E., Panagos, P., Schneider, F., Ahrens, B., Leifeld, J., Hugelius, G., Emmett, B.A., Cosby, B.J., Brentegani, M., Tandy, S., Thomas, A., van Soest, M.A.J., Robinson, D.A., 2025. The fraction of carbon in soil organic matter as a national-scale soil process indicator. *Global Change Biology* 31: e70572.
9. Bretscher, D., Grassnick, N., Isaacs, C., Heidecke, C., Koster, B., Merbold, L., Leifeld, J., 2025. Opportunities and limitations of farm-level greenhouse gas accounting tools: An overview based on experience from practice. *Science of The Total Environment* 1003: 180688.
10. Desmet, F., Sieber, P., Ceschia, E., Leifeld, J., 2025. Accounting for albedo changes in carbon farming schemes. *Science of the Total Environment* 1002: 180631.
11. Leifeld, J., Walz, I., 2025. Pyroligneous acid effects on crop yield and soil organic matter in agriculture—a review. *Agronomy* 15: 927.
12. Wüst-Galley, C., Leifeld, J., 2025 The distribution and (future) use of Switzerland's organic soils. *Mires and Peat* 32, article 24.

13. Keel, S.G., Budai, A., Elsgaard, L., Hardy, B., Levvasseur, F., Zhi, L., Mondini, C., Plaza, C., Leifeld, J., 2025. Efficiency of plant biomass processing pathways for long-term soil carbon storage. *European Journal of Soil Science* 76: e70074.
14. Leifeld, J., Paul, S.M., Gross-Schmolders, M., Wang, Y., Wüst-Galley, C., 2025. Crediting peatland rewetting for carbon farming: some considerations amidst optimism. *Mitigation and Adaptation Strategies for Global Change* 30: 13.

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15. Rainford, S.-K., Leifeld, J., Siegl, S., Hagenbucher, S., Riedel, J., Gross, T., Niggli, U., Keel, S.G., 2024. No relationship between outputs of simple humus balance calculators (VDLUF4 and STAND) and soil organic carbon trends. *European Journal of Soil Science* 75: e70007.
16. Paul, S.M., Ammann, C., Wang, Y., Alewell, C., Leifeld, J., 2024. Can mineral soil coverage be a suitable option to mitigate greenhouse gas emissions from agriculturally managed peatlands? *Agriculture, Ecosystems & Environment* 375: 109197.
17. Sriskandarajah, N., Wüst-Galley, C., Heller, S., Leifeld, J., Määttä, T., Ouyang, Z., Runkle, B.R.K., Schiedung, M., Schmidt, M.W.I., Tumber-Dávila, S.J., Malhotra, A., 2024. Belowground plant allocation regulates rice methane emissions from degraded peat soils. *Scientific Reports* 14: 14593.
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19. Rathnayake, D., Schmidt, H.-P., Leifeld, J., Bürge, D., Bucheli, T.D., Hagemann, N., 2024. Quantifying soil organic carbon after biochar application: How to avoid (the risk of) of counting CDR twice? *Frontiers in Climate* 6, doi: 10.3389/fclim.2024.1343516.
20. Wang, Y., Calanca, P., Leifeld, J., 2024. Sources of nitrous oxide emissions from agriculturally managed peatlands. *Global Change Biology* 30: e17144.
21. Don, A., Seidel, F., Leifeld, J., Kätterer, T., Martin, M., Pellerin, S., Emde, D., Seitz, D., Chenu, C., 2024. Reply letter to Munoz et al. 'on the importance of time in carbon sequestration in soils and climate change mitigation'—Keep carbon sequestration terminologies consistent and functional'. *Global Change Biology* 30: e17230.
22. Don, A., Seidel, F., Leifeld, J., Kätterer, T., Martin, M., Pellerin, S., Emde, D., Seitz, D., Chenu, C., 2024. Carbon sequestration in soils and climate change mitigation – definitions and pitfalls. *Global Change Biology* 30:e16983.

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23. Fouché, J., Burgeon, V., Meersmans, J., Leifeld, J., Cornelis, J.-T., 2023. Accumulation of century-old biochar contributes to carbon storage and stabilization in the subsoil. *Geoderma* 440: 116717.
24. Keel, S.G., Bretscher, D., Leifeld, J., von Ow, A., Wüst-Galley, C., 2023. Soil carbon sequestration potential bounded by population growth, land availability, food production, and climate change. *Carbon Management* 14: 2244456.
25. Rodrigues, L., Budai, A., Elsgaard, L., Hardy, B., Keel, S.G., Mondini, C., Plaza, C., Leifeld, J., 2023. The importance of biochar quality and pyrolysis yield for soil carbon sequestration in practice. *European Journal of Soil Science* 74: e13396.
26. Wüst-Galley, C., Heller, S., Ammann, C., Paul, S., Doetterl, S., Leifeld, J., 2023. Methane and nitrous oxide emissions from rice grown on organic soils in the temperate zone. *Agriculture, Ecosystems and Environment* 356: 108641.
27. Mayer, M., Leifeld, J., Szidat, S., Mäder, P., Krause, H.-M., Steffens, M., 2023. Dynamic stability of mineral-associated organic matter: enhanced stability and turnover through organic fertilization in a temperate agricultural topsoil. *Soil Biology & Biochemistry*, <https://doi.org/10.1016/j.soilbio.2023.109095>.
28. Rathnayake, D., Schmidt, H. P., Leifeld, J., Mayer, J., Epper, C.A., Bucheli, T.D., Hagemann, N., 2023. Biochar from animal manure: a critical assessment on technical feasibility, economic viability and ecological impact. *GCB Bioenergy* 15: 1078-1104.

29. Leifeld, J., 2023. Carbon farming: Climate change mitigation via non-permanent carbon sinks. *Journal of Environmental Management* 339: 117893.

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30. Wang, Y., Paul, S.M., Alewell, C., Leifeld, J., 2022. Reduced nitrogen losses from drained temperate agricultural peatland after mineral soil coverage. *Biology and Fertility of Soils* 59, 153–165.
31. Serk, H., Nilsson, M.B., Figurea, J., Krüger, J.P., Leifeld, J., Alewell, C., Schleucher, J., 2022. Organo-chemical characterization of peat reveals decomposition of specific hemicellulose structures as the main cause of organic matter loss in the acrotelm. *Environmental Science & Technology*: 17410–17419.
32. Leifeld, J., Keel, S.G., 2022. Quantifying negative radiative forcing of non-permanent and permanent soil carbon sinks. *Geoderma* 423: 115971.
33. Hardy, B., Borchard, N., Leifeld, J., 2022. Identification of thermal signature and quantification of charcoal in soil using differential scanning calorimetry and benzene polycarboxylic acid (BPCA) markers. *SOIL* 8: 451-466.
34. Groß-Schmolders, M., Klein, K., Emsens, W.-J., van Diggelen, R., Aggenbach, C.J.S., Liczner, Y., Frouz, J., Leifeld, J., Alewell, C., 2022. Stable isotopes ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$) and biomarkers as indicators of the hydrological regime of fens in a European east–west transect. *Science of The Total Environment* 838: 156603.
35. Guillaume, T., Makowski, D., Libohova, Z., Elfouki, S., Fontana, M., Leifeld, J., Bragazza, L., Sinaj, S., 2022. Carbon storage in agricultural topsoils and subsoils is promoted by including temporary grasslands into the crop rotation. *Geoderma* 422: 115937.
36. Wang, Y., Paul, S.M., Jocher, M., Alewell, C., Leifeld, J., 2022. Reduced nitrous oxide emissions from drained temperate agricultural peatland after coverage with mineral soil. *Frontiers in Environmental Science* 10: 656599.
37. Klein, K., Schellekens, J., Gross-Schmolders, M., von Sengbusch, P., Alewell, C., Leifeld, J., 2022. Characterizing ecosystem-driven chemical composition differences in natural and drained Finnish bogs using Pyrolysis-GC/MS. *Organic Geochemistry* 165: 104351.
38. Grafmüller, J., Böhm, A., Zhuang, Y., Spahr, S., Müller, P., Otto, T., Bucheli, T.D., Leifeld, J., Giger, R., Tobler, M., Schmidt, H.-P., Dahmen, N., Hagemann, N., 2022. Wood ash as an additive in biomass pyrolysis: effects on biochar yield, properties and agricultural performance. *ACS Sustainable Chemistry & Engineering*: 10, 8, 2720–2729.

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39. Rodrigues, L., Hardy, B., Huyghebeart, B., Fohrafellner, J., Fornara, D., Barančíková, G., Bárcena, T.G., De Boever, M., Di Bene, C., Feizienė, D., Käetterer, T., Laszlo, P., O’Sullivan, L., Seitz, D., Leifeld, J., 2021. Achievable agricultural soil carbon sequestration across Europe from country-specific estimates. *Global Change Biology* 27:6363–6380.
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41. Gross-Schmolders, M., Klein, K., Birkholz, A., Leifeld, J., Alewell, C., 2021. Rewetting and drainage of nutrient-poor peatlands indicated by specific bacterial membrane fatty acids and a repeated sampling of stable isotopes ($\delta^{15}\text{N}$, $\delta^{13}\text{C}$). *Frontiers Environmental Science* 9: 730106.
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43. Leifeld, J., Alewell, C., Paul, S.M., 2021. Accumulation of C₄-carbon from *Miscanthus* in organic-matter-rich soils. *Global Change Biology Bioenergy* 13: 1319-1328.
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47. Klein, K., Gross-Schmolders, M., Alewell, C., Leifeld, J., 2021. Heating up a cold case: Applications of analytical pyrolysis GC/MS to access molecular biomarkers in peat. *Advances in Agronomy* 165: 115-159.
48. Burgeon, V., Fouché, J., Leifeld, J., Chenu, C., Cornélis, J.-T., 2021. Organo-mineral associations largely contribute to the stabilization of century-old pyrogenic organic matter in cropland soils. *Geoderma* 388: 114841.

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51. Humpenöder, F., Karstens, K., Lotze-Campen, H., Leifeld, J., Menichetti, L., Barthelmes, A., Popp, A., 2020. Peatland protection and restoration are key for climate change mitigation. *Environmental Research Letters* 15, 104093.
52. Gross-Schmolders, M., von Sengbusch, P., Krüger, J.P., Klein, K., Birkholz, A., Leifeld, J., Alewell, C., 2020. Switch of fungal to bacterial degradation in natural, drained and rewetted oligotrophic peatlands reflected in $\delta^{15}\text{N}$ and fatty acid composition. *SOIL* 6: 299-313.
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58. Keel, S.G., Anken, T., Büchi, L., Chervet, A., Fliessbach, A., Flisch, R., Huguenin-Elie, O., Mäder, P., Mayer, J., Sinaj, S., Sturny, W., Wüst-Galley, C., Zihlmann, U., Leifeld, J., 2019. Loss of soil organic carbon in Swiss long-term agricultural experiments over a wide range of management practices. *Agriculture, Ecosystems & Environment* 2019, 286: 106654.

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64. Hüppi, R., Felber, R., Krauss, M., Six, J., Leifeld, J., Fuss, R., 2018. Restricting the nonlinearity parameter in soil greenhouse gas flux calculation for more reliable flux estimates. *PlosOne* 13: e0200876, 10.1371/journal.pone.0200876.
65. Leifeld, J., Alewell, C., Bader, C., Krüger, J.P., Müller, C.W., Sommer, M., Steffens, M., Szidat, S., 2018. Pyrogenic carbon contributes substantially to carbon storage in intact and degraded Northern Peatlands. *Land Degradation and Development* 29: 2082-2091.
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