

# Publications

## Peer reviewed

1. Tsekhmistrenko, M., Collins, J., Bloem, H., Fallah, T., Ritsema, J., Jeffery, S. and Nissen-Meyer, T. (2025). Between two furrows: soil bulk density from non-invasive seismology. *Environmental Research Communications*, 7(11), p.111010.
2. Athembo, W.R., Redshaw, J. and Jeffery, S. (2025). Effects of Plastic-Char on Soil Functions and Crop Productivity. *Cleaner and Circular Bioeconomy*, p.100189.
3. Verheijen, F.G., Jelincic, A., Jeffery, S., Domingos, T., Khodaparast, Z. and Bastos, A.C. (2025). Escherichia coli thrives in soil 24 months after grazing exclusion in a rainfed Mediterranean biodiverse pasture A brief research report for special issue "Advances in Soil Pollution Research: Risk Assessment and Ecosystems Management" in *Frontiers in Environmental Science*. *Frontiers in Environmental Science*, 13, p.1638383.
4. Natalio, A.I., Back, M.A., Richards, A. and Jeffery, S. (2025). Dynamics of Collembola ecomorphological groups within a no-till arable system. *Agricultural and Forest Entomology*, 27(3), pp.357-368.
5. Muir, J.B., Jeffery, S., Collins, J., Marks, A., Brake, N. and Nissen-Meyer, T. (2024). Quantifying spatial peat depth with seismic micronodes and the implications for carbon stock estimates. *Science of The Total Environment*, 949, p.174769.
6. Natalio, A.I., Ahmed, M., Back, M.A., Richards, A. and Jeffery, S. (2024). Temporal monitoring of free-living nematode communities for evaluation of soil health in an arable crop rotation. *Pedobiologia*, 104, p.150959.
7. Natalio, A.I., Back, M.A., Richards, A. and Jeffery, S. (2024). Field-scale heterogeneity overrides management impacts following conversion to no-till within an arable system. *Applied Soil Ecology*, 193, p.105104.
8. Kettlewell, P., Byrne, R. and Jeffery, S. (2023). Wheat area expansion into northern higher latitudes and global food security. *Agriculture, Ecosystems & Environment*, 351, p.108499.
9. Gholamahmadi, B., Jeffery, S., Gonzalez-Pelayo, O., Prats, S.A., Bastos, A.C., Keizer, J.J. and Verheijen, F.G.A. (2023). Biochar impacts on runoff and soil erosion by water: A systematic global scale meta-analysis. *Science of the Total Environment*, 871, p.161860.
10. Jeffery, S., van de Voorde, T.F., Harris, W.E., Mommer, L., Van Groenigen, J.W., De Deyn, G.B., Ekelund, F., Briones, M.J. and Bezemer, T.M. (2022). Biochar application differentially affects soil micro-, meso-macro-fauna and plant productivity within a nature restoration grassland. *Soil Biology and Biochemistry*, 174, p.108789.
11. Nicolay, R., Jeffery, S. and Randall, N. (2021). Comparison of three soil health indicators between different vegetative strip compositions. *African Journal of Range & Forage Science*, 38(sup1), pp.S104-S109.
12. Jiménez-González, M.A., De la Rosa, J.M., Aksoy, E., Jeffery, S., Oliveira, B.R.F. and Verheijen, F.G.A. (2021). Spatial distribution of pyrogenic carbon in Iberian topsoils estimated by chemometric analysis of infrared spectra. *Science of The Total Environment*, 790, p.148170.
13. Natalio, A.I., Back, M., Richards, A. and Jeffery, S. (2021). The effects of saline toxicity and food-based AD digestate on the earthworm *Allolobophora chlorotica*. *Geoderma*, 393, p.115005.
14. Jeffery, S. and Verheijen, F.G.A. (2020). A new soil health policy paradigm: Pay for practice not performance! *Environmental Science & Policy*, 112, pp.371-373.
15. Rosace, M.C., Veronesi, F., Briggs, S., Cardenas, L.M. and Jeffery, S. (2020). Legacy effects override soil properties for CO<sub>2</sub> and N<sub>2</sub>O but not CH<sub>4</sub> emissions following digestate application to soil. *GCB Bioenergy*, 12(6), pp.445-457.
16. Kirby, M.E., Mirza, M.W., Leigh, T., Oldershaw, L., Reilly, M. and Jeffery, S. (2019) Destruction of *Staphylococcus aureus* and the impact of chlortetracycline on biomethane production during anaerobic digestion of chicken manure. *Heliyon* 5(11), p.e02749.
17. Jeffery, S., I. Memelink, E. Hodgson, S. Jones, T. F. J. van de Voorde, T. M. Bezemer, L. Mommer, and J. W. van Groenigen (2017). Initial Biochar Effects on Plant Productivity Derive from N Fertilization. *Plant and Soil*: 1-14.

18. Jeffery, S., D. Abalos, M. Prodana, A. C. Bastos, J. W. van Groenigen, B. A. Hungate, and F. Verheijen (2017). Biochar Boosts Tropical but Not Temperate Crop Yields. *Environmental Research Letters* 12, no. 5 053001.
19. Kammann, C., J. Ippolito, N. Hagemann, N. Borchard, M. L. Cayuela, J. M. Estavillo, T. Fuertes-Mendizabal, S. Jeffery, et al. (2017) Biochar as a Tool to Reduce the Agricultural Greenhouse-Gas Burden—Knowns, Unknowns and Future Research Needs. *Journal of Environmental Engineering and Landscape Management* 25, 2, 114-39.
20. Verheijen, F.G., Mankasingh, U., Penizek, V., Panzacchi, P., Glaser, B., Jeffery, S., Bastos, A.C., Tammeorg, P., Kern, J., Zavalloni, C. and Zanchettin, G. (2017) Representativeness of European biochar research: Part I—field experiments. *Journal of Environmental Engineering and Landscape Management*, 25(2), pp.140-151.
21. Sakrabani, R., Kern, J., Mankasingh, U., Zavalloni, C., Zanchettin, G., Bastos, A.C., Tammeorg, P., Jeffery, S., Glaser, B. and Verheijen, F.G.A. (2017) Representativeness of European biochar research: part II—pot and laboratory studies. *Journal of Environmental Engineering and Landscape Management*, 25(2), pp.152-159.
22. Tammeorg, P., Bastos, A.C., Jeffery, S., Rees, F., Kern, J., Graber, E.R., Ventura, M., Kibblewhite, M., Amaro, A., Budai, A. and Cordovil, C.M.D.S. (2017) Biochars in soils: towards the required level of scientific understanding. *Journal of Environmental Engineering and Landscape Management*, 25(2), pp.192-207.
23. Jeffery, S., Verheijen, F.G., Kammann, C. and Abalos, D. (2016) Biochar effects on methane emissions from soils: a meta-analysis. *Soil Biology and Biochemistry*, 101, pp.251-258.
24. Abalos, D., S. Jeffery, C. F. Drury and C. Wagner-Riddle (2016) Improving fertilizer management in the US and Canada for N<sub>2</sub>O mitigation: Understanding potential positive and negative side-effects on corn yields. *Agriculture, Ecosystems & Environment* 221: 214-221.
25. Jeffery, S., M. B. Meinders, C. R. Stoof, T. M. Bezemer, T. F. van de Voorde, L. Mommer and J. W. van Groenigen (2015) Biochar application does not improve the soil hydrological function of a sandy soil. *Geoderma* 251: 47-54.
26. Jeffery, S., T. M. Bezemer, G. Cornelissen, T. W. Kuyper, J. Lehmann, L. Mommer, S. P. Sohi, T. F. Voorde, D. A. Wardle and J. W. Groenigen (2015) The way forward in biochar research: targeting trade-offs between the potential wins. *GCB Bioenergy* 7(1): 1-13.
27. Sagrilo, E., S. Jeffery, E. Hoffland and T. W. Kuyper (2015) Emission of CO<sub>2</sub> from biochar-amended soils and implications for soil organic carbon. *GCB Bioenergy* 7(6): 1294-1304.
28. Cayuela, M.L., Jeffery, S. and van Zwieten, L. (2015) The molar H: Corg ratio of biochar is a key factor in mitigating N<sub>2</sub>O emissions from soil. *Agriculture, Ecosystems & Environment*, 202, pp.135-138.
29. Abalos, D., S. Jeffery, A. Sanz-Cobena, G. Guardia and A. Vallejo (2014) Meta-analysis of the effect of urease and nitrification inhibitors on crop productivity and nitrogen use efficiency. *Agriculture, Ecosystems & Environment* 189: 136-144.
30. Cayuela, M., S. Jeffery and L. Van Zwieten (2015) The molar H: Corg ratio of biochar is a key factor in mitigating N<sub>2</sub>O emissions from soil. *Agriculture, Ecosystems & Environment* 202: 135-138.
31. Sagrilo, E., S. Jeffery, E. Hoffland and T. W. Kuyper (2015) Emission of CO<sub>2</sub> from biochar-amended soils and implications for soil organic carbon. *GCB Bioenergy* 7(6): 1294-1304.
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33. Jeffery, S., T. M. Bezemer, G. Cornelissen, T. W. Kuyper, J. Lehmann, L. Mommer, S. P. Sohi, T. F. Voorde, D. A. Wardle and J. W. Groenigen (2015) The way forward in biochar research: targeting trade-offs between the potential wins. *GCB Bioenergy* 7(1): 1-13.
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35. Cayuela, M., L. Van Zwieten, B. Singh, S. Jeffery, A. Roig and M. Sánchez-Monedero (2014) Biochar's role in mitigating soil nitrous oxide emissions: A review and meta-analysis. *Agriculture, Ecosystems & Environment* 191: 5-16.

36. de Voorde, T. F. v., T. M. Bezemer, J. W. Van Groenigen, S. Jeffery and L. Mommer (2014). Soil biochar amendment in a nature restoration area: effects on plant productivity and community composition. *Ecological Applications* 24(5): 1167-1177.
37. Mia, S., J. Van Groenigen, T. Van de Voorde, N. Oram, T. Bezemer, L. Mommer and S. Jeffery (2014) Biochar application rate affects biological nitrogen fixation in red clover conditional on potassium availability. *Agriculture, Ecosystems & Environment* 191: 83-91.
38. Oram, N. J., T. F. van de Voorde, G.-J. Ouweland, T. M. Bezemer, L. Mommer, S. Jeffery and J. W. Van Groenigen (2014) Soil amendment with biochar increases the competitive ability of legumes via increased potassium availability. *Agriculture, Ecosystems & Environment* 191: 92-98.
39. Cayuela, M.L., Van Zwieten, L., Singh, B.P., Jeffery, S., Roig, A. and Sánchez-Monedero, M.A. (2014) Biochar's role in mitigating soil nitrous oxide emissions: A review and meta-analysis. *Agriculture, Ecosystems & Environment*, 191, pp.5-16.
40. Abalos, D., Jeffery, S., Sanz-Cobena, A., Guardia, G. and Vallejo, A. (2014) Meta-analysis of the effect of urease and nitrification inhibitors on crop productivity and nitrogen use efficiency. *Agriculture, Ecosystems & Environment*, 189, pp.136-144.
41. Crane-Droesch, A., S. Abiven, S. Jeffery and M. S. Torn (2013) Heterogeneous global crop yield response to biochar: a meta-regression analysis. *Environmental Research Letters* 8(4): 044049.
42. Tóth, G., Gardi, C., Bódis, K., Ivits, É., Aksoy, E., Jones, A., Jeffrey, S., Petursdottir, T. and Montanarella, L. (2013) Continental-scale assessment of provisioning soil functions in Europe. *Ecological Processes*, 2(1).
43. Verheijen, F.G., Jeffery, S., van der Velde, M., Penížek, V., Beland, M., Bastos, A.C. and Keizer, J.J. (2013) Reductions in soil surface albedo as a function of biochar application rate: implications for global radiative forcing. *Environmental Research Letters*, 8(4), p.044008.
44. Gardi, C., S. Jeffery and A. Saltelli (2013) An estimate of potential threats levels to soil biodiversity in EU. *Global Change Biology* 19(5): 1538-1548.
45. Jeffery, S., Verheijen, F.G., van der Velde, M. and Bastos, A.C. (2011) A quantitative review of the effects of biochar application to soils on crop productivity using meta-analysis. *Agriculture, ecosystems & environment*, 144(1), pp.175-187.
46. Jeffery, S., Harris, J.A., Rickson, R.J. and Ritz, K. (2010) Effects of soil-surface microbial community phenotype upon physical and hydrological properties of an arable soil: a microcosm study. *European journal of soil science*, 61(4), pp.493-503.
47. Jeffery, S. and Gardi, C. (2010) Soil biodiversity under threat-- a review. *Acta Societatis Zoologicae Bohemicae*, 74(1-2), pp.7-12.
48. Jeffery, S., Harris, J.A., Rickson, R.J. and Ritz, K. (2009) The spectral quality of light influences the temporal development of the microbial phenotype at the arable soil surface. *Soil Biology and Biochemistry*, 41(3), pp.553-560.
49. Jeffery, S., Harris, J.A., Rickson, R.J. and Ritz, K., (2007) Microbial community phenotypic profiles change markedly with depth within the first centimetre of the arable soil surface. *Soil Biology and Biochemistry*, 39(5), pp.1226-1229.

## Letters/ Abstracts

1. Verheijen, F. G., A. C. Bastos and S. Jeffery (2015) International policy: Bury the idea that soils are a local issue. *Nature* 528 (7583): 479-479.
2. Jeffery, S., Verheijen, F.G., Bastos, A.C. and Van Der Velde, M. (2014) A comment on 'Biochar and its effects on plant productivity and nutrient cycling: a meta-analysis': on the importance of accurate reporting in supporting a fast-moving research field with policy implications. *Global Change Biology. Bioenergy*, 6(3), pp.176-179.

## Edited Books

1. Orgiazzi, A., Bardgett, R.D., Barrios, E., Behan-Pelletier, V., Briones, M.J.I., Chotte, J-L., De Deyn, G.B., Eggleton, P., Fierer, N., Fraser, T., Hedlund, K., Jeffery, S., Johnson, N.C., Jones, A., Kandeler, E., Kaneko, N., Lavelle, P., Lemanceau, P., Miko, L., Montanarella, L., Moreira,

- F.M.S., Ramirez, K.S., Scheu, S., Singh, B.K., Six, J., van der Putten, W.H., Wall, D.H. (Eds.) (2016) *Global Soil Biodiversity Atlas*. European Commission, Publications Office of the European Union, Luxembourg.
2. Jeffery, S., Gardi, C., Jones, A., Montanarella, L., Marmo, L. Miko, L., Ritz, K., Peres, G., Römbke J. and van der Putten W.H. (Eds.) (2010) *European Atlas of Soil Biodiversity*. European Commission, Publications Office of the European Union, Luxembourg.

### **Authored Book Chapters**

1. Jeffery, S., Verheijen, F.G., Abalos, D. and Bastos, A.C., 2024. Plant productivity with biochar applications to soils. In *Biochar for Environmental Management* (pp. 331-352). Routledge.
2. Verheijen, F.G., Bastos, A.C., Schmidt, H.P. and Jeffery, S. (2019) Biochar and certification. *Sustainability Certification Schemes in the Agricultural and Natural Resource Sectors: Outcomes for Society and the Environment*, p.113.
3. Jeffery, S., Abalos, D., Spokas, K.A. and Verheijen, F.G.A. (2015) Biochar effects on crop yield. *Biochar for environmental management: science, technology and implementation*, 2, pp.301-325.
4. Verheijen, F., Bastos, A.C., Schmidt, H.P., Brandão, M. and Jeffery, S. (2015) Biochar sustainability and certification. *Biochar for Environmental Management: Science, Technology and Implementation*. London, UK: Routledge.

### **Professional Papers**

1. Jones, A., Panagos, P., Barcelo, S., Bouraoui, F., Bosco, C., Dewitte, O., Gardi, C., Erhard, M., Hervás, J., Hiederer, R. and Jeffery, S. (2012) *The State of Soil in Europe*. A Contribution of the JRC to the European Environment Agency's Environment State and Outlook Report. European Commission, Luxembourg.
2. Jeffery, S. and van der Putten, W.H. (2011) *Soil Borne Human Diseases*. Luxembourg: Publications office of the European Union, EUR 24893 EN.
3. Verheijen, F.G.A., Jeffery, S., Bastos, A.C., van der Velde, M., and Diafas, I. (2009) *Biochar Application to Soils - A Critical Scientific Review of Effects on Soil Properties, Processes and Functions*. EUR 24099 EN, Office for the Official Publications of the European Communities, Luxembourg
4. Gardi, C. and Jeffery, S. (2009) *Soil Biodiversity*. EUR-OP, European Commission Joint Research Centre.

### **Conference Papers**

1. Jeffery, S. (2025) December. Soil bulk density from ultra-high frequency, non-invasive seismic soil analysis. *British Soil Science Society Annual Conference*
2. Jeffery, S. (2018) March. Biochar application to soil for climate change mitigation and crop production. In *Aspects of Applied Biology 139. Ecosystem and Habitat Management: Research, Policy and Practice*.
3. Jeffery, S., Meinders, M.B., Stoof, C., Bezemer, T.M., Mommer, L. and Willem van Groenigen, J., (2015) April Why biochar application did not improve the soil water retention of a sandy soil: An investigation into the underlying mechanisms. In *EGU General Assembly Conference Abstracts* (Vol. 17).
4. Jeffery, S., Memelink, I., Voorde, T.V., Mommer, L., Bezemer, M. and Groenigen, J.W.V. (2014) December. The ecological consequences of biochar application to grasslands. In *AGU Fall Meeting Abstracts*.
5. Verheijen, F.G.A., Jeffery, S., Bastos, A.C. and van der Velde, M. (2012) April. Biochar effects on soils: overview and knowledge gaps. In *EGU General Assembly Conference Abstracts* (Vol. 14, p. 12780).

### **Popular Science**

1. Jeffery, S. and van der Putten, W.H. (2015) The Ecology of Soil-Borne Human Diseases. *Microbiology Today*. Issue: Soil.