Publication list - Marie Spohn

Last update: May, 2025

In total, I have published 93 peer-reviewed publications, of which 39 as first author, 29 as last/senior author and 25 as co-author. Thus, I have an outstandingly high proportion of first author publications. I publish regularly in the leading journals in my field (for example, Soil Biology and Biochemistry), and have published in journals with a broad scope, such as PNAS, Nature Communications, and Global Change Biology. According to Google Scholar, my H factor is 45.

Peer-reviewed publications

2025

1. Fay, P. A., Gherardi, L. A., Yahdjian, L., Adler, P. B., Bakker, J. D., Bharath, S., …, **Spohn, M.**, … & Wheeler, G. R. (2025). Multiple nutrient interactions govern the global grassland biomass-precipitation relationship. PNAS, accepted.

2. Sarangi, V., & **Spohn, M.** (2025). A Novel Method to Determine the Carbon Isotopic Composition of Inositol Hexaphosphate (Phytate) in Soil by Gas Chromatography–Combustion–Isotope Ratio Mass Spectrometry. Rapid Communications in Mass Spectrometry, 39(9), e9998.

3. **Spohn, M**. & Wanek, W. (2024). Quantifying element fluxes using radioisotopes. New Phytologist, 245(2).

4. **Spohn, M.,** Bagchi, S., Bakker, J. D., Borer, E. D., Carbutt, C., Catford, J. A., Dickman, C. R., … & Seabloom, E. W. (2025). Unimodal relationships between plant biomass and the environment in global grasslands. Communications Biology, 8(1), 97.

5. Vázquez, E., & **Spohn, M.** (2025). Non-symbiotic N_2 fixation is less sensitive to changes in temperature than carbon mineralization in Northern forest soils. Geoderma, 453, 117128.

6. Zhang, P, E Seabloom, Foo J., MacDougall, A., Harpole, W., Adler, P., …, **Spohn, M.**, …, & Borer, E. (2025). Dominant species predict plant richness and biomass in global grasslands. Nature Ecology and Evolution, accepted.

2024

7. **Spohn, M**. (2024). Interactions of nitrogen and phosphorus in plant nutrition - Analysis of a 60-years old field experiment. Plant and Soil, accepted.

8. **Spohn, M.** (2024). Preferential adsorption of nitrogen-and phosphorus-containing organic compounds to minerals in soils: A review. Soil Biology and Biochemistry, 109428.

9. **Spohn, M.**, & Stendahl, J. (2024). Soil carbon and nitrogen contents in forest soils are related to soil texture in interaction with pH and metal cations. Geoderma, 441, 116746.

2023

10. Andrade-Linares, D. R., Schwerdtner, U., Schulz, S., Dannenmann, M., **Spohn, M.**, Baum, C., ... & Schloter, M. (2023). Climate change and management intensity alter spatial distribution and abundance of P mineralizing bacteria and arbuscular mycorrhizal fungi in mountainous grassland soils. Soil Biology and Biochemistry, 186, 109175.

11. Scheibe, A., Sierra, C., & **Spohn, M.** (2023). Recently fixed carbon fuels microbial activity several meters below the soil surface. Biogeosciences, 20(4), 827-838.

12. **Spohn, M.**, & Berg, B. (2023). Import and release of nutrients during the first five years of plant litter decomposition. Soil Biology and Biochemistry, 176, 108878.

13. **Spohn, M.**, & Stendahl, J. (2023). Spatial patterns of nitrogen isotope ratios in forest soils are related to latitude and soil phosphorus concentration. Biogeochemistry, 165(1), 43-56.

14. **Spohn, M.**, Bagchi, S., Biederman, L. A., Borer, E. T., Bråthen, K. A., Bugalho, M. N., ... & Yahdjian, L. (2023). The positive effect of plant diversity on soil carbon depends on climate. Nature Communications, 14(1), 6624.

15. **Spohn, M.**, Braun, S., & Sierra, C. A. (2023). Continuous decrease in soil organic matter despite increased plant productivity in an 80-years-old phosphorus-addition experiment. Communications Earth & Environment, 4(1), 251.

16. Vázquez, E., Borer, E. T., Bugalho, M. N., Caldeira, M. C., McCulley, R. L., Risch, A. C., ... & **Spohn, M.** (2023). The synergistic response of primary production in grasslands to combined nitrogen and phosphorus addition is caused by increased nutrient uptake and retention. Plant and Soil, 490(1), 371-385.

2022

17. Pastore, G., Weig, A. R., Vázquez, E., & **Spohn, M.** (2022). Weathering of calcareous bedrocks is strongly affected by the activity of soil microorganisms. Geoderma, 405, 115408.

18. Scheibe, A., & **Spohn, M.** (2022). N_2 fixation per unit microbial biomass increases with aridity. Soil Biology and Biochemistry, 172, 108733.

19. Schwerdtner, U., & **Spohn, M.** (2022). Plant species interactions in the rhizosphere increase maize N and P acquisition and maize yields in intercropping. Journal of Soil Science and Plant Nutrition, 22(3), 3868-3884.

20. Schwerdtner, U., Lacher, U., & **Spohn, M.** (2022). Lupin causes maize to increase organic acid exudation and phosphorus concentration in intercropping. Journal of Sustainable Agriculture and Environment, 1(3), 191-202.

21. Schwerdtner, U., Lacher, U., & **Spohn, M.** (2022). Soy and mustard effectively mobilize phosphorus from inorganic and organic sources. Nutrient Cycling in Agroecosystems, 124(2), 211-226.

22. Seuss, I., Scheibe, A., & **Spohn, M.** (2022). N_2 fixation is less sensitive to changes in soil water content than carbon and net nitrogen mineralization. Geoderma, 424, 115973.

23. **Spohn, M.**, & Stendahl, J. (2022). Carbon, nitrogen, and phosphorus stoichiometry of organic matter in Swedish forest soils and its relationship with climate, tree species, and soil texture. Biogeosciences, 19(8), 2171-2186.

24. **Spohn, M.**, Diáková, K., Aburto, F., Doetterl, S., & Borovec, J. (2022). Sorption and desorption of organic matter in soils as affected by phosphate. Geoderma, 405, 115377.

25. Tuyishime, J. M., Adediran, G. A., Olsson, B. A., **Spohn, M.**, Hillier, S., Klysubun, W., & Gustafsson, J. P. (2022). Phosphorus abundance and speciation in acid forest Podzols–Effect of postglacial weathering. Geoderma, 406, 115500.

26. Tuyishime, J. M., Adediran, G. A., Olsson, B. A., Zetterberg, T. S., Högbom, L., **Spohn, M.**, ... & Gustafsson, J. P. (2022). Phosphorus speciation in the organic layer of two Swedish forest soils 13–24 years after wood ash and nitrogen application. Forest Ecology and Management, 521, 120432.

27. Vázquez, E., Schleuss, P. M., Borer, E. T., Bugalho, M. N., Caldeira, M. C., Eisenhauer, N., ... & **Spohn, M.** (2022). Nitrogen but not phosphorus addition affects symbiotic N_2 fixation by legumes in natural and semi-natural grasslands located on four continents. Plant and Soil, 478(1-2), 689-707.

2021

28. Manzoni, S., Chakrawal, A., **Spohn, M.**, & Lindahl, B. D. (2021). Modeling microbial adaptations to nutrient limitation during litter decomposition. Frontiers in Forests and Global Change, 64.

29. Michas, A., Pastore, G., Chiba, A., Grafe, M., Clausing, S., Polle, A., Schloter, M., **Spohn, M.**, & Schulz, S. (2021). Phosphorus Availability Alters the Effect of Tree Girdling on the Diversity of Phosphorus Solubilizing Soil Bacterial Communities in Temperate Beech Forests. Frontiers in Forests and Global Change, 4, 696983.

30. Schleuss, P. M., Widdig, M., Biederman, L. A., Borer, E. T., Crawley, M. J., Kirkman, K. P., Seabloom, E.W., Wragg, P.D. & **Spohn, M** (2021). Microbial substrate stoichiometry governs nutrient effects on nitrogen cycling in grassland soils. Soil Biology and Biochemistry, 155, 108168.

31. Schwerdtner, U., & **Spohn, M.** (2021). Interspecific root interactions increase maize yields in intercropping with different companion crops. Journal of Plant Nutrition and Soil Science, 184(5), 596-606.

32. **Spohn, M.**, & Holzheu, S. (2021). Temperature controls diel oscillation of the CO_2 concentration in a desert soil. Biogeochemistry, 156, 279-292.

33. **Spohn, M.**, Aburto, F., Ehlers, T. A., Farwig, N., Frings, P. J., Hartmann, H., ... & Oelmann, Y. (2021). Terrestrial ecosystems buffer inputs through storage and recycling of elements. Biogeochemistry, 156(3), 351-373.

34. Van Sundert, K., Arfin Khan, M. A., Bharath, S., Buckley, Y. M., Caldeira, M. C., Donohue, I., …, **Spohn, M.**, ... & Vicca, S. (2021). Fertilized graminoids intensify negative drought effects on grassland productivity. Global Change Biology, 27(11), 2441-2457.

2020

35. Brucker, E., Kernchen, S., & **Spohn, M.** (2020). Release of phosphorus and silicon from minerals by soil microorganisms depends on the availability of organic carbon. Soil Biology and Biochemistry, 143, 107737.

36. Holz, M., Zarebanadkouki, M., Carminati, A., Becker, J. N., & **Spohn, M.** (2020). The effect of root hairs on rhizosphere phosphatase activity. Journal of Plant Nutrition and Soil Science, 183(3), 382-388.

37. Klotzbücher, A., Schunck, F., Klotzbücher, T., Kaiser, K., Glaser, B., **Spohn, M.**, ... & Mikutta, R. (2020). Goethite-bound phosphorus in an acidic subsoil is not available to beech (Fagus sylvatica L.). Frontiers in Forests and Global Change, 3, 94.

38. Meller, S., Frossard, E., **Spohn, M.**, & Luster, J. (2020). Plant nutritional status explains the modifying effect of provenance on the response of beech sapling root traits to differences in soil nutrient supply. Frontiers in Forests and Global Change, 3, 535117.

39. Pastore, G., Kernchen, S., & **Spohn, M.** (2020). Microbial solubilization of silicon and phosphorus from bedrock in relation to abundance of phosphorus-solubilizing bacteria in temperate forest soils. Soil Biology and Biochemistry, 151, 108050.

40. Pastore, G., Kaiser, K., Kernchen, S., & **Spohn, M.** (2020). Microbial release of apatite-and goethite-bound phosphate in acidic forest soils. Geoderma, 370, 114360.

41. Schleuss, P. M., Widdig, M., Heintz-Buschart, A., Kirkman, K., & **Spohn, M.** (2020). Interactions of nitrogen and phosphorus cycling promote P acquisition and explain synergistic plant-growth responses. Ecology, 101(5), e03003.

42. **Spohn, M.** (2020). Increasing the organic carbon stocks in mineral soils sequesters large amounts of phosphorus. Global Change Biology, 26(8), 4169-4177.

43. **Spohn, M.** (2020). Phosphorus and carbon in soil particle size fractions: A synthesis. Biogeochemistry, 147, 225-242.

44. **Spohn, M.**, Müller, K., Höschen, C., Mueller, C. W., & Marhan, S. (2020). Dark microbial CO_2 fixation in temperate forest soils increases with CO_2 concentration. Global Change Biology, 26(3), 1926-1935.

45. **Spohn, M.**, Zeißig, I., Brucker, E., Widdig, M., Lacher, U., & Aburto, F. (2020). Phosphorus solubilization in the rhizosphere in two saprolites with contrasting phosphorus fractions. Geoderma, 366, 114245.

46. Widdig, M., Heintz-Buschart, A., Schleuss, P. M., Guhr, A., Borer, E. T., Seabloom, E. W., & **Spohn, M.** (2020). Effects of nitrogen and phosphorus addition on microbial community composition and element cycling in a grassland soil. Soil Biology and Biochemistry, 151, 108041.

47. Widdig, M., Schleuss, P. M., Biederman, L. A., Borer, E. T., Crawley, M. J., Kirkman, K. P., ... & **Spohn, M.** (2020). Microbial carbon use efficiency in grassland soils subjected to nitrogen and phosphorus additions. Soil Biology and Biochemistry, 146, 107815.

2019

48. Brucker, E., & **Spohn, M.** (2019). Formation of soil phosphorus fractions along a climate and vegetation gradient in the Coastal Cordillera of Chile. Catena, 180, 203-211.

49. Holz, M., Zarebanadkouki, M., Carminati, A., Hovind, J., Kaestner, A., & **Spohn, M.** (2019). Increased water retention in the rhizosphere allows for high phosphatase activity in drying soil. Plant and Soil, 443, 259-271.

50. Schleuss, P. M., Widdig, M., Heintz-Buschart, A., Guhr, A., Martin, S., Kirkman, K., & **Spohn, M.** (2019). Stoichiometric controls of soil carbon and nitrogen cycling after long-term nitrogen and phosphorus addition in a mesic grassland in South Africa. Soil Biology and Biochemistry, 135, 294-303.

51. **Spohn, M.**, & Schleuss, P. M. (2019). Addition of inorganic phosphorus to soil leads to desorption of organic compounds and thus to increased soil respiration. Soil Biology and Biochemistry, 130, 220-226.

52. Widdig, M., Schleuss, P. M., Weig, A. R., Guhr, A., Biederman, L. A., Borer, E. T., ... & **Spohn, M.** (2019). Nitrogen and phosphorus additions alter the abundance of phosphorus-solubilizing bacteria and phosphatase activity in grassland soils. Frontiers in Environmental Science, 7, 185.

2018

53. Bernhard, N., Moskwa, L. M., Schmidt, K., Oeser, R. A., Aburto, F., Bader, M. Y., ... **Spohn, M.**, …. & Kühn, P. (2018). Pedogenic and microbial interrelations to regional climate and local topography: New insights from a climate gradient (arid to humid) along the Coastal Cordillera of Chile. Catena, 170, 335-355.

54. Gavrichkova, O., Liberati, D., de Dato, G., Abou Jaoudé, R., Brugnoli, E., De Angelis, P., Guidolotti, G., Spohn, M., Pausch, J., Tian, J., & Kuzyakov, Y. (2018). Effects of rain shortage on carbon allocation, pools and fluxes in a Mediterranean shrub ecosystem–a ^{13}C labelling field study. Science of the Total Environment, 627, 1242-1252.

55. George, T. S., Giles, C. D., Menezes-Blackburn, D., Condron, L. M., Gama-Rodrigues, A. C., Jaisi, D., ... **Spohn, M.**, … & Haygarth, P. M. (2018). Organic phosphorus in the terrestrial environment: a perspective on the state of the art and future priorities. Plant and Soil, 427, 191-208.

56. Heuck, C., Smolka, G., Whalen, E. D., Frey, S., Gundersen, P., Moldan, F., ... & **Spohn, M.** (2018). Effects of long-term nitrogen addition on phosphorus cycling in organic soil horizons of temperate forests. Biogeochemistry, 141, 167-181.

57. Nassal, D., **Spohn, M.**, Eltlbany, N., Jacquiod, S., Smalla, K., Marhan, S., & Kandeler, E. (2018). Effects of phosphorus-mobilizing bacteria on tomato growth and soil microbial activity. Plant and Soil, 427, 17-37.

58. Oeser, R. A., Stroncik, N., Moskwa, L. M., Bernhard, N., Schaller, M., Canessa, R., ... **Spohn, M.**, … & von Blanckenburg, F. (2018). Chemistry and microbiology of the Critical Zone along a steep climate and vegetation gradient in the Chilean Coastal Cordillera. Catena, 170, 183-203.

59. **Spohn, M.**, & Sierra, C. A. (2018). How long do elements cycle in terrestrial ecosystems?. Biogeochemistry, 139, 69-83.

60. **Spohn, M.**, Zavišić, A., Nassal, P., Bergkemper, F., Schulz, S., Marhan, S., ... & Polle, A. (2018). Temporal variations of phosphorus uptake by soil microbial biomass and young beech trees in two forest soils with contrasting phosphorus stocks. Soil Biology and Biochemistry, 117, 191-202.

2017

61. Dietrich, K., **Spohn, M.**, Villamagua, M., & Oelmann, Y. (2017). Nutrient addition affects net and gross mineralization of phosphorus in the organic layer of a tropical montane forest. Biogeochemistry, 136, 223-236.

62. Dinh, M. V., Guhr, A., **Spohn, M.**, & Matzner, E. (2017). Release of phosphorus from soil bacterial and fungal biomass following drying/rewetting. Soil Biology and Biochemistry, 110, 1-7.

63. Jeong, G., Choi, K., **Spohn, M.**, Park, S. J., Huwe, B., & Ließ, M. (2017). Environmental drivers of spatial patterns of topsoil nitrogen and phosphorus under monsoon conditions in a complex terrain of South Korea. PLoS One, 12(8), e0183205.

64. **Spohn, M.**, & Widdig, M. (2017). Turnover of carbon and phosphorus in the microbial biomass depending on phosphorus availability. Soil Biology and Biochemistry, 113, 53-59.

65. Zederer, D. P., Talkner, U., **Spohn, M.**, & Joergensen, R. G. (2017). Microbial biomass phosphorus and C/N/P stoichiometry in forest floor and A horizons as affected by tree species. Soil Biology and Biochemistry, 111, 166-175.

2016

66. Bergkemper, F., Bünemann, E. K., Hauenstein, S., Heuck, C., Kandeler, E., Krüger, J., ... & Schulz, S. (2016). An inter-laboratory comparison of gaseous and liquid fumigation based methods for measuring microbial phosphorus (Pmic) in forest soils with differing P stocks. Journal of microbiological methods, 128, 66-68.

67. Dinh, M. V., Schramm, T., **Spohn, M.**, & Matzner, E. (2016). Drying–rewetting cycles release phosphorus from forest soils. Journal of Plant Nutrition and Soil Science, 179(5), 670-678.

68. Heuck, C., & **Spohn, M.** (2016). Carbon, nitrogen and phosphorus net mineralization in organic horizons of temperate forests: stoichiometry and relations to organic matter quality. Biogeochemistry, 131, 229-242.

69. Hofmann, K., Heuck, C., & **Spohn, M.** (2016). Phosphorus resorption by young beech trees and soil phosphatase activity as dependent on phosphorus availability. Oecologia, 181, 369-379.

70. **Spohn, M.** (2016). Element cycling as driven by stoichiometric homeostasis of soil microorganisms. Basic and Applied Ecology, 17(6), 471-478.

71. **Spohn, M.**, Klaus, K., Wanek, W., & Richter, A. (2016). Microbial carbon use efficiency and biomass turnover times depending on soil depth–Implications for carbon cycling. Soil Biology and Biochemistry, 96, 74-81.

72. **Spohn, M.**, Novák, T. J., Incze, J., & Giani, L. (2016). Dynamics of soil carbon, nitrogen, and phosphorus in calcareous soils after land-use abandonment–A chronosequence study. Plant and Soil, 401, 185-196.

73. **Spohn, M.**, Pötsch, E. M., Eichorst, S. A., Woebken, D., Wanek, W., & Richter, A. (2016). Soil microbial carbon use efficiency and biomass turnover in a long-term fertilization experiment in a temperate grassland. Soil Biology and Biochemistry, 97, 168-175.

74. Zavišić, A., Nassal, P., Yang, N., Heuck, C., **Spohn, M.**, Marhan, S., ... & Polle, A. (2016). Phosphorus availabilities in beech (*Fagus sylvatica* L.) forests impose habitat filtering on ectomycorrhizal communities and impact tree nutrition. Soil Biology and Biochemistry, 98, 127-137.

2015

75. Guhr, A., Borken, W., **Spohn, M.**, & Matzner, E. (2015). Redistribution of soil water by a saprotrophic fungus enhances carbon mineralization. Proceedings of the National Academy of Sciences, 112(47), 14647-14651.

76. Heuck, C., Weig, A., & **Spohn, M.** (2015). Soil microbial biomass C: N: P stoichiometry and microbial use of organic phosphorus. Soil Biology and Biochemistry, 85, 119-129.

77. Huang, W., & **Spohn, M.** (2015). Effects of long-term litter manipulation on soil carbon, nitrogen, and phosphorus in a temperate deciduous forest. Soil Biology and Biochemistry, 83, 12-18.

78. Kruse, J., Abraham, M., Amelung, W., Baum, C., Bol, R., Kühn, O., ... **Spohn, M.** … & Leinweber, P. (2015). Innovative methods in soil phosphorus research: A review. Journal of Plant Nutrition and Soil Science, 178(1), 43-88.

79. **Spohn, M.** (2015). Microbial respiration per unit microbial biomass depends on litter layer carbon-to-nitrogen ratio. Biogeosciences, 12(3), 817-823.

80. **Spohn, M.**, & Chodak, M. (2015). Microbial respiration per unit biomass increases with carbon-to-nutrient ratios in forest soils. Soil Biology and Biochemistry, 81, 128-133.

81. **Spohn, M.**, Treichel, N. S., Cormann, M., Schloter, M., & Fischer, D. (2015). Distribution of phosphatase activity and various bacterial phyla in the rhizosphere of *Hordeum vulgare* L. depending on P availability. Soil Biology and Biochemistry, 89, 44-51.

2014 and 2013

82. Novák, T. J., Incze, J., **Spohn, M.**, Glina, B., & Giani, L. (2014). Soil and vegetation transformation in abandoned vineyards of the Tokaj Nagy-Hill, Hungary. Catena, 123, 88-98.

83. **Spohn, M.**, Babka, B., & Giani, L. (2013). Changes in soil organic matter quality during sea-influenced marsh soil development at the North Sea coast. Catena, 107, 110-117.

84. **Spohn, M.**, Carminati, A., & Kuzyakov, Y. (2013). Soil zymography–a novel in situ method for mapping distribution of enzyme activity in soil. Soil Biology and Biochemistry, 58, 275-280.

85. **Spohn, M.**, Ermak, A., & Kuzyakov, Y. (2013). Microbial gross organic phosphorus mineralization can be stimulated by root exudates–a ^{33}P isotopic dilution study. Soil Biology and Biochemistry, 65, 254-263.

86. **Spohn, M.**, & Kuzyakov, Y. (2013). Distribution of microbial-and root-derived phosphatase activities in the rhizosphere depending on P availability and C allocation–Coupling soil zymography with ^{14}C imaging. Soil Biology and Biochemistry, 67, 106-113.

87. **Spohn, M.**, & Kuzyakov, Y. (2013). Phosphorus mineralization can be driven by microbial need for carbon. Soil Biology and Biochemistry, 61, 69-75.

88. **Spohn, M.**, & Kuzyakov, Y. (2014). Spatial and temporal dynamics of hotspots of enzyme activity in soil as affected by living and dead roots—a soil zymography analysis. Plant and Soil, 379, 67-77.

2012 and earlier

89. **Spohn, M.**, & Giani, L. (2012). Carbohydrates, carbon and nitrogen in soils of a marine and a brackish marsh as influenced by inundation frequency. Estuarine, Coastal and Shelf Science, 107, 89-96.

90. **Spohn, M.**, & Giani, L. (2011). Impacts of land use change on soil aggregation and aggregate stabilizing compounds as dependent on time. Soil Biology and Biochemistry, 43(5), 1081-1088.

91. **Spohn, M.**, & Giani, L. (2011). Total, hot water extractable, and oxidation-resistant carbon in sandy hydromorphic soils-analysis of a 220-year chronosequence. Plant and Soil, 338, 183-192.

92. **Spohn, M.**, & Giani, L. (2010). Water-stable aggregates, glomalin-related soil protein, and carbohydrates in a chronosequence of sandy hydromorphic soils. Soil Biology and Biochemistry, 42(9), 1505-1511.

93. **Spohn, M.**, & Rillig, M. C. (2012). Temperature- and moisture-dependent soil water repellency induced by the basidiomycete *Agaricus bisporus*. Pedobiologia, 55(1), 59-61.