

## List of Publications Prof. Dr. Nicole Wrage-Mönnig (January 2020)

### Publications in Refereed Journals

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- Borchard, N., Schirrmann, N., Cayuela, M.L., Kammann, C., Wrage-Mönnig, N., Estavillo, J.M., Fuertes-Mendizábal, T., Sigue, G., Spokas, K., Ippolito, J.A., Novak, J. (2019). Biochar, soil and land-use interactions that reduce nitrate leaching and N<sub>2</sub>O emissions: A meta-analysis. *Science of the Total Environment* 651, 2354-2364.
- Breitsameter, L., Küchenmeister, K., Küchenmeister, F., **Wrage, N.**, Isselstein, J. (2013). Canopy cover and herbage accumulation of fourteen grassland species when stocked with chickens. *Agronomy Journal*, 105, 727-734.
- Carlsson, M., Merten, M., Kayser, M., Isselstein, J., **Wrage-Mönnig, N.** (2017). Drought stress resistance and resilience of permanent grasslands are shaped by functional group composition and N fertilization. *Agriculture, Ecosystems and Environment* 236, 52-60.
- Chapuis-Lardy, L., **Wrage, N.**, Metay, A., Chotte, J.-L., Bernoux, M. (2007). Soils, a sink for N<sub>2</sub>O? A review. *Global Change Biology* 13, 1-17.
- Cuchillo Hilario, M., **Wrage-Mönnig, N.**, Isselstein, J. (2017). Behavioral patterns of (co-)grazing cattle and sheep on swards differing in plant diversity. *Applied Animal Behaviour Science* 191, 17-23.
- Cuchillo, H.M., **Wrage-Mönnig, N.**, Isselstein, J. (2018). Forage selectivity of co-grazing cattle and sheep on swards differing in plant diversity. *Grass and Forage Science* 73, 320-329.
- Cuchillo, M.H., Puga, C.D., **Wrage, N.**, Pérez-Gil, R.F. (2010). Feeding goats on scrubby Mexican rangeland and pasteurization: Influences on milk and artisan cheese quality. *Tropical Animal Health and Production* 42, 1127–1134.
- Cuchillo, H.M., Puga, D.C., **Wrage-Mönnig, N.**, Espinosa, M.J.G., Montaña, B.S., Navarro-Ocaña, A., Ledesma, J.A., Diaz, M., Pérez-Gil, R.F. (2013). Chemical composition, antioxidant activity and bioactive compounds of vegetation species ingested by goats on semiarid rangelands. *Journal of Animal and Feed Sciences* 22, 106-115.
- Djagoun, C.A.M.S., Sinsin, B., **Wrage-Mönnig, N.** (2020). Stable isotope niche segregation between rare topi antelope (*Damaliscus lunatus korrigum*) and other sympatric bulk grazers in Pendjari Biosphere Reserve (Northern Benin): Implication for topi conservation. *Global Ecology and Conservation* 22, e00918.
- Faramarzi, M., Kesting, S., Isselstein, J., **Wrage, N.** (2010). Rangeland condition in relation to environmental variables, grazing intensity and livestock owners' perceptions in semi-arid rangeland in western Iran. *The Rangeland Journal* 32, 367-377.
- Fiedler, S.R., Augustin, J., **Wrage-Mönnig, N.**, Jurasinski, G., Gusovius, B., Glatzel, S. (2017). Potential short-term losses of N<sub>2</sub>O and N<sub>2</sub> from high concentrations of biogas digestate in arable soils. *Soil* 3, 161-176.
- Frankow-Lindberg, B., **Wrage-Mönnig, N.** (2015). Light availability is improved for legume species grown in moderately N-fertilized mixtures with non-legume species. *Basic and Applied Ecology*, 16, 403-412.
- Fuertes-Mendizábal, T., Huérfano, X., Vega-Mas, I., Torralbo, F., Menéndez, S., Ippolito, J.A., Kammann, C., Wrage-Mönnig, N., Cayuela, M.L., Borchard, N., Spokas, K., Novak, J., González-Moro, M.B., González-Murua, C., Estavillo, J.M. (2019). Biochar

- reduces the efficiency of nitrification inhibitor 3,4-dimethylpyrazole phosphate (DMPP) mitigating N<sub>2</sub>O emissions. *Scientific Reports* 9, 2346.
- Gauly, M., Bollwein, H., Breves, G., Brüggemann, K., Dänicke, S., Daş, G., Demeler, J., Hansen, H., Isselstein, J., König, S., Lohölter, M., Martinsohn, M., Meyer, U., Potthoff, M., Sanker, C., Schröder, B., **Wrage, N.**, Meibaum, B., von Samson-Himmelstjerna, G., Stinshoff, H., Wrenzycki, C. (2013). Future consequences and challenges for dairy cow production systems arising from climate change in Central Europe - A review. *Animal* 7, 843-859.
- Gebauer, J., Adam, Y.O., Cuní Sanchez, A., Darr, D., Eltahir, M.E.S., Fadl, K.E.M., Fernsebner, G., Frei, M., Habte, T.Y., Hammer, K., Mahmoud, T.E., Hunsche, M., Johnson, H., Kordofani, M., Krawinkel, M., Kugler, F., Luedeling, E., Maina, A., Mithöfer, D., Munthali, C.R.Y., Noga, G., North, R., Owino, W.O., Prinz, K., Rimberia, F.K., Saied, A., Schüring, M., Sennhenn, A., Späth, M.A., Taha, M.E.N., Triebel, A., Wichern, F., Wiehle, M., **Wrage-Mönnig, N.**, Kehlenbeck, K. (2016). Africa's wooden elephant: the baobab tree (*Adansonia digitata* L.) in Sudan and Kenya – a review. *Genetic Resources and Crop Evolution* 63, 377-399.
- Hoefl, I., Steude, K., **Wrage, N.**, Veldkamp, E. (2012). Response of nitrogen oxide emissions to grazer species and plant species composition in temperate agricultural grassland. *Agriculture, Ecosystems and Environment* 151, 34-43.
- Jerrentrup, J.S., **Wrage-Mönnig, N.**, Röver, K.-U., Isselstein, J. (2014). Grazing intensity affects insect diversity via sward structure and heterogeneity in a long-term experiment. *Journal of Applied Ecology* 51, 968-977.
- Kammann, C., Ippolito, J., Hagemann, N., Borchard, N., Cayuela, M.L., Estavillo, J.M., Fuertes-Mendizabal, T., Jeffery, S., Kern, J., Novak, J., Rasse, D., Saarnio, S., Schmidt, H.-P., Spokas, K., **Wrage-Mönnig, N.** (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, 114-139.
- Kesting, S., **Wrage, N.**, Isselstein, J. (2009). Herbage mass and nutritive value of herbage of extensively managed temperate grasslands along a gradient of shrub encroachment. *Grass and Forage Science* 64, 246-254.
- Knoblauch, C., Watson, C., Berendonk, C., Becker, R., **Wrage-Mönnig, N.**, Wichern, F. (2017). Relationship between remote sensing data, plant biomass and soil nitrogen dynamics in intensively managed grasslands under controlled conditions. *Sensors* 17, 1483.
- Kominda, M., Küchenmeister, K., Küchenmeister, F., Breitsameter, L., **Wrage-Mönnig, N.**, Kayser, M., Isselstein, J. (2019). Forage legumes for future dry climates: Lower relative biomass losses of minor forage legumes compared to *Trifolium repens* under conditions of periodic drought stress. *Journal of Agronomy and Crop Science* 205, 460-469.
- Kool, D.M., **Wrage, N.**, Oenema, O., Dolfing, J., van Groenigen, J.W. (2007). Oxygen exchange between (de)nitrification intermediates and H<sub>2</sub>O and its implications for source determination of N<sub>2</sub>O and NO<sub>3</sub><sup>-</sup>: a review. *Rapid Communications in Mass Spectrometry* 21, 3569-3578.
- Kool, D.M., Müller, C., **Wrage, N.**, Oenema, O., van Groenigen, J.W. (2009). Oxygen exchange between nitrogen oxides and H<sub>2</sub>O can occur during nitrifier pathways. *Soil Biology and Biochemistry* 41, 1632-1641.

- Kool, D.M., **Wrage, N.**, Oenema, O., Harris, D., van Groenigen, J.W. (2009). The  $^{18}\text{O}$  isotopic signature of biogenic nitrous oxide is determined by O exchange with water. *Rapid Communications in Mass Spectrometry* 23, 104-108.
- Kool, D.M., **Wrage, N.**, Zechmeister-Boltenstern, S., Pfeffer, M., Brus, D., Oenema, O., Van Groenigen, J.W. (2010). Nitrifier denitrification can be a source of  $\text{N}_2\text{O}$  from soil: a revised approach to the dual isotope labelling method. *European Journal of Soil Science* 61, 759-772.
- Kool, D.M., Dolfig, J., **Wrage, N.**, Van Groenigen, J.W. (2011). Nitrifier denitrification as a distinct and significant source of nitrous oxide from soil. *Soil Biology and Biochemistry* 43, 174-178.
- Kool, D.M., Van Groenigen, J.W., **Wrage, N.** (2011). Source determination of nitrous oxide based on nitrogen and oxygen isotope tracing: dealing with oxygen exchange. *Methods in Enzymology* 496, 139-160.
- Kool, D.M., **Wrage, N.**, Oenema, O., van Kessel, C., van Groenigen, J.W. (2011). Oxygen exchange with water alters the oxygen isotopic signature of nitrate in soil ecosystems. *Soil Biology and Biochemistry* 43, 1180-1185.
- Küchenmeister, F., Küchenmeister, K., **Wrage, N.**, Kayser, M., Isselstein, J. (2012). Yield and yield stability in mixtures of productive grassland species: Does species number or functional group composition matter? *Grassland Science* 58, 94-100.
- Küchenmeister, F., Küchenmeister, K., Kayser, M., **Wrage-Mönnig, N.**, Isselstein, J. (2014). Effects of drought stress and sward botanical composition on the nutritive value of grassland herbage. *International Journal of Agriculture and Biology* 16, 715-722.
- Küchenmeister, K., Küchenmeister, F., **Wrage, N.**, Kayser, M., Isselstein, J. (2012). Establishment and early yield development of five possible alternatives to *Trifolium repens* as a grassland legume. *Journal of Agricultural Science* 4, 86-95.
- Küchenmeister, K., Küchenmeister, F., Kayser, M., **Wrage-Mönnig, N.**, Isselstein, J. (2013). Influence of drought stress on nutritive value of perennial forage legumes. *International Journal of Plant Production* 7, 693-710.
- Liu, T., Qin, S., Pang, Y., Yao, J., Zhao, X., Clough, T., **Wrage-Mönnig, N.**, Zhou, S. (2019). Rice root Fe plaque enhances paddy soil  $\text{N}_2\text{O}$  emissions via Fe(II) oxidation-coupled denitrification. *Soil Biology and Biochemistry* 139, 107610.
- Mahnke, B., Wrage-Mönnig, N., Leinweber, P., Müller, J. (2019). The phosphorus dilemma in organically farmed grasslands – are legume presence and phytodiversity incompatible? *Ecosystems and People* 15, 61-73.
- Mehmood, K., Chávez Garcia, E., Schirrmann, M., Ladd, B., Kammann, C., **Wrage-Mönnig, N.**, Siebe, C., Estavillo, J.M., Fuertes-Mendizabal, T., Cayuela, M., Sigua, G., Spokas, K., Cowie, A.L., Novak, J., Ippolito, J.A., Borchard, N. (2017). Biochar research activities and their relation to development and environmental quality. A meta-analysis. *Agronomy for Sustainable Development* 37, 22.
- Oenema, O., **Wrage, N.**, Velthof, G., Groenigen, J.W., Dolfig, J., Kuikman, P. (2005). Trends in global nitrous oxide emissions from animal production systems. *Nutrient Cycling in Agroecosystems* 72, 51-65.
- Petersen, U., **Wrage, N.**, Köhler, L., Leuschner, C., Isselstein, J. (2011). Manipulating the species composition of permanent grasslands - a new approach to biodiversity experiments. *Basic and Applied Ecology* 13, 1-9.
- Petersen, U., **Wrage-Mönnig, N.**, Isselstein, J. (2013). Herbicide application to control sward composition – how does it affect yield and forage value in different management

- variants? *International Journal of Biodiversity Science, Ecosystem Services & Management* 9, 155-165.
- Qin, S., Clough, T., Luo, J., **Wrage-Mönnig, N.**, Oenema, O., Zhang, Y., Hu, C. (2017). Perturbation-free measurement of *in situ* di-nitrogen emissions from denitrification in nitrate-rich aquatic ecosystems. *Water Research* 109, 94-101.
- Qin, S., Pang, Y., Clough, T., **Wrage-Mönnig, N.**, Hu, C., Zhang, Y., Fang, Y. (2017). N<sub>2</sub> production via aerobic pathways may play a significant role in nitrogen cycling in upland soils. *Soil Biology and Biochemistry* 108, 36-40.
- Qin, S., Yu, L., Yang, Z., Li, M., Clough, T., **Wrage-Mönnig, N.**, Hu, C., Liu, B., Chen, S., Zhou, S. (2019). Electrodes donate electrons for nitrate reduction in a soil matrix via DNRA and denitrification. *Environmental Science and Technology* 53, 2002-2012.
- Qin, S., Zhang, Z., Yu, L., Yuan, H., Clough, T.J., **Wrage-Mönnig, N.**, Luo, J., Zhou, S. (2017). Enhancement of subsoil denitrification using an electrode as an electron donor. *Soil Biology and Biochemistry* 115, 511-515.
- Rabenarivo, M., **Wrage-Mönnig, N.**, Chotte, J.-L., Rabeharisoa, L., Razafimbelo, T., Chapuis-Lardy, L. (2014). Emissions of CO<sub>2</sub> and N<sub>2</sub>O from a pasture soil from Madagascar – Simulating conversion to direct-seeding mulch-based cropping in incubations with organic and inorganic inputs. *Journal of Plant Nutrition and Soil Science* 177, 360–368.
- Rohe, L., Anderson, T.-H., Braker, G., Flessa, H., Giesemann, A., **Wrage-Mönnig, N.**, Well, R. (2014). Fungal oxygen exchange between denitrification intermediates and water. *Rapid Communications in Mass Spectrometry* 28, 377-384.
- Rohe, L., Anderson, T.-H., Braker, G., Flessa, H., Giesemann, A., Lewicka-Szczebak, D., **Wrage-Mönnig, N.**, Well, R. (2014). Dual isotope and isotopomer signatures of nitrous oxide from fungal denitrification – a pure culture study. *Rapid Communications in Mass Spectrometry* 28, 1893-1903.
- Şahin Demirbağ, N., Röver, K.-U., **Wrage, N.**, Hofmann, M., Isselstein, J. (2009). Sward height related herbage growth rate on extensively managed pastures. *Grass and Forage Science* 64, 12-18.
- Seither, M., **Wrage, N.**, Isselstein, J. (2012). Sward composition and grazer species effects on nutritive value and herbage accumulation. *Agronomy Journal* 104, 497-506.
- Seither, M., **Wrage, N.**, Isselstein, J. (2014). Biomass production of *Lolium-Cynosuretum* grassland is not affected by sward composition. *Journal of Plant Nutrition and Soil Science* 177, 613-623.
- Tilsner, J., **Wrage, N.**, Lauf, J., Gebauer, G. (2003). Emission of gaseous nitrogen oxides from an extensively managed grassland in NE Bavaria, Germany. I. Annual budgets of N<sub>2</sub>O and NO<sub>x</sub> emissions. *Biogeochemistry* 63, 229-247.
- Tilsner, J., **Wrage, N.**, Lauf, J., Gebauer, G. (2003). Emission of gaseous nitrogen oxides from an extensively managed grassland in NE Bavaria. II. Stable isotope natural abundance of N<sub>2</sub>O. *Biogeochemistry* 63, 249-267.
- Wrage, N.**, Velthof, G.L., van Beusichem, M.L., Oenema, O. (2001). Role of nitrifier denitrification in the production of nitrous oxide. *Soil Biology and Biochemistry* 33, 1723-1732.
- Wrage, N.**, Lauf, J., del Prado, A., Pinto, M., Pietrzak, S., Yamulki, S., Oenema, O., Gebauer, G. (2004). Distinguishing sources of N<sub>2</sub>O in European grasslands by stable isotope analysis. *Rapid Communications in Mass Spectrometry* 18, 1-7.

- Wrage, N.**, Velthof, G.L., Laanbroek, H.J., Oenema, O. (2004). Nitrous oxide production in grassland soils: Assessing the contribution of nitrifier denitrification. *Soil Biology and Biochemistry* 36, 229-236.
- Wrage, N.**, Velthof, G.L., Oenema, O., Laanbroek, H.J. (2004). Acetylene and oxygen as inhibitors of nitrous oxide production in *Nitrosomonas europaea* and *Nitrosospira briensis*: a cautionary tale. *FEMS Microbiology Ecology* 47, 13-18.
- Wrage, N.**, van Groenigen, J.W., Oenema, O., Baggs, E.M. (2005). A novel dual-isotope labelling method for distinguishing between soil sources of N<sub>2</sub>O. *Rapid Communications in Mass Spectrometry* 19, 3298-3306.
- Wrage, N.**, Chapuis-Lardy, L., Isselstein, J. (2010) Importance of phosphorus for plant diversity. *Sustainable Agriculture Reviews* 3, 147-169.
- Wrage, N.**, Küchenmeister, F., Isselstein, J. (2011) Isotopic composition of soil, vegetation or cattle hair no suitable indicator of nitrogen balances in permanent pasture. *Nutrient Cycling in Agroecosystems* 90, 189-199.
- Wrage, N.**, Strodthoff, J., Cuchillo, H., Isselstein, J., Kayser, M. (2011). Phytodiversity of temperate permanent grasslands: ecosystem services for agriculture and livestock management for diversity conservation. *Biodiversity and Conservation* 20, 3317-3339.
- Wrage, N.**, Şahin Demirbağ, N., Hofmann, M., Isselstein, J. (2012). Vegetation height of patch more important for phytodiversity than that of paddock. *Agriculture, Ecosystem and Environment* 155, 111-116.
- Wrage-Mönnig, N.**, Horn, M.A., Well, R., Müller, C., Velthof, G., Oenema, O. (2018). Citation Classic: The role of nitrifier denitrification in the production of nitrous oxide revisited. *Soil Biology and Biochemistry* 123, A3-A16.
- Yuan, H., Zhang, Z., Li, M., Clough, T., Wrage-Mönnig, N., Qin, S., Ge, T., Liao, H., Zhou, S. (2019). Biochar's role as an electron shuttle for mediating soil N<sub>2</sub>O emissions. *Soil Biology and Biochemistry* 133, 94-96.
- Yuan, H., Zhang, Z., Qin, S., Zhou, S., Hu, C., Clough, T., **Wrage-Mönnig, N.**, Luo, J., Conrad, R. (2019) Effects of nitrate and water content on acetylene inhibition technique bias when analysing soil denitrification rates under an aerobic atmosphere. *Geoderma* 334, 33-36.
- Zhumanova, M., **Wrage-Mönnig, N.**, Darr, D. (2016). Farmers' decision-making and land use changes in Kyrgyz agropastoral systems. *Mountain Research and Development* 36, 506-517.
- Zhumanova, M., Mönnig, C., Hergarten, C., Darr, D., **Wrage-Mönnig, N.** (2018). Assessment of vegetation degradation in mountainous pastures of Western Tien-Shan, Kyrgyzstan, using eMODIS NDVI. *Ecological Indicators* 95, 527-543.
- Zielke, L., **Wrage-Mönnig, N.**, Müller, J. (2017). Seasonal preferences in diet selection of semi-free ranging European bison (*Bison bonasus*). *European Bison Conservation Newsletter*, 61-70.
- Zielke, L., **Wrage-Mönnig, N.**, Müller, J. (2018). Development and assessment of a body condition score scheme for European bison (*Bison bonasus*). *Animals* 8, 163.
- Zielke, L., Wrage-Mönnig, N., Müller, J., Neumann, C. (2019). Implications of Spatial Habitat Diversity on Diet Selection of European Bison and Przewalski's Horses in a Rewilding Area. *Diversity* 11, 63.

## Monographs and Book Chapters

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- Estavillo, J.M., Merino, P., **Wrage, N.**, Dixon, L., Corré, W.J., Sapek, B., Plodzik, M. (2000). The influence of soil pH and nitrogen fertiliser application on N<sub>2</sub>O production from nitrification and denitrification. In Effects of liming and nitrogen fertilizer application on soil acidity and gaseous nitrogen oxide emissions in grassland systems (Eds. O. Oenema & A. Sapek), pp. 61-71. IMUZ Publisher, Falenty.
- Schnyder, H., Isselstein, J., Taube, F., Auerswald, K., Schellberg, J., Wachendorf, M., Herrmann, A., Gierus, M., **Wrage, N.**, Hopkins, A. (Eds., 2010). Grassland in a changing world. Grassland Science in Europe<sup>1</sup> 15, Mecke Druck und Verlag, Duderstadt.
- Wrage, N.**, Dixon, L., Estavillo, J.M., Nawalany, P., Oenema, O. (2000). The influence of soil pH and nitrogen fertiliser application on N<sub>2</sub>O production by nitrifier denitrification. Some preliminary results. In Effects of liming and nitrogen fertilizer application on soil acidity and gaseous nitrogen oxide emissions in grassland systems (Eds. O. Oenema & A. Sapek), pp. 72-83. IMUZ Publisher, Falenty.
- Wrage, N.** (1999). Quantifizierung und Herkunftszuordnung der N<sub>2</sub>O-Emission aus einem Grünlandökosystem mit Hilfe von <sup>15</sup>N- und <sup>18</sup>O-Messungen. Diplomarbeit, University of Bayreuth.
- Wrage, N.** (2003). Pitfalls in measuring nitrous oxide production by nitrifiers. Dissertation, Wageningen University and Research Centre, Wageningen.
- Wrage, N.**, Isselstein, J. (Eds., 2007). Neue Funktionen des Grünlands: Ökosystem, Energie, Erholung. Mitteilungen der Arbeitsgemeinschaft Grünland und Futterbau, Band 8, Göttingen.

## Selected Contributions to Agricultural Periodicals

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- Isselstein, J., Kayser, M., Küchenmeister, F., Küchenmeister, K., **Wrage, N.** (2011). Grünland im Klimawandel. DLG-Mitteilungen 6/2011, 76-79.
- Isselstein, J., Kayser, M., Küchenmeister, F., Küchenmeister, K., **Wrage, N.** (2011). Klimawandel mit Folgen für das Grünland. Österreichische Bauernzeitung 28, 5.
- Wrage, N.**, Müller, E., Wunderow, C., Isselstein, J. (2008). 7 Fragen zum Klimawandel. Topagrar 3, 26-28.

## Media Coverage of the Person and her Projects

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- Anonym. 05.08.2014: Neue Professorin an Agrarfakultät ernannt – Nicole Wrage-Mönnig wird im Fach Grünland lehren. Ostsee-Zeitung.
- Grass, M., 04.02.2012: Englisch am Niederrhein. Rheinische Post.
- Herbst, C., 13.1.2012: Interview for ‚Komm mach MINT: Nationaler Pakt für Frauen in MINT-Berufen‘ <http://www.komm-mach-mint.de/MINT-Du/MINT-Interviews/%28Fach%29/Naturwissenschaften>
- Grass, M., 30.11.2011: Die Frau fürs Grünland. Rheinische Post. <http://www.rp-online.de/niederrhein-nord/kleve/nachrichten/die-frau-fuers-gruenland-1.2620539>
- Stadtradio Göttingen, 19.01.2011: One hour Live-Interview: Eine Stunde ein Thema – Agrarwissenschaften und Klimawandel.

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<sup>1</sup> ‚Grassland Science in Europe‘ is the annual publication of peer-reviewed contributions to the meetings of the European Grassland Federation

Böhm, C., 17.09.10: Wasserstress für Gräser und Klee, Göttinger Tageblatt.  
<http://www.goettinger-tageblatt.de/Nachrichten/Wissen/Wissen-vor-Ort/Wasserstress-fuer-Graeser-und-Klee>