

Jay M. Ham

Professor

Department of Soil and Crop Sciences

Colorado State University

Fort Collins, CO 80523

Email: jay.ham@colostate.edu

(970) 491-4112 (office)

(970) 491-0564 (fax)

(970) 488-0524 (mobile)

<http://soilcrop.agsci.colostate.edu/faculty-2/ham-jay/>

Education / Training:

1990 Ph.D., Texas A&M University, Micrometeorology (Soil Science)

1986 M.S., Oklahoma State University, Agronomy (Soil Physics)

1984 B.S., Kansas State University, Agronomy

Employment History

2008-present Professor, Department of Soil and Crop Sci., Colorado State University

2000-2008 Professor, Department of Agronomy, Kansas State University

1994-2000 Associate Professor, Department of Agronomy, Kansas State University

1990-1994 Assistant Professor, Department of Agronomy, Kansas State University

Research:

Environmental physics and micrometeorology

Instrumentation development; Sensors for soil, water, and air applications

Open-source sensor hardware and software for research and education

Air quality; Water quality

Soil-plant-water relations; Irrigation management

Courses Taught:

SOCR 322/522 Principles of Microclimatology

SOCR 500 Environmental Instrumentation Laboratory

SOCR 501 Internet-of-Things Sensor Laboratory

SOCR 650 Research Proposal Development

Selected Research Grants Related to Project:

Ham, J.M. 2015. Novel Laser Spectroscopic Methane Sensor with Revolutionary High Performance/Low Cost to Enable Ultra-Sensitive Methane Leak Detection Systems.

\$250,000. Li-Cor Biociences/ ARPA-e. Department of Energy.

Yalin, A., Peirce, J, and Ham J. 2015. Study of ammonia and methane emissions from animal feeding operations using unmanned aerial system laser sensors. USDA National Research Initiative. \$500,000.

Von Fischer, J.C., D. Cooley, Jay Ham, R. Schumacher, A. Yalin. 2015. Methane Mapping at Colorado State University. \$200,000. Environmental Defense Fund.

Ham, J.M., A. Yalin, S. Archibeque, M. Carolan, and K. Kummerow. 2011. Robotics for Managing Air Emissions of Ammonia at Livestock Operations. \$605,000. USDA National Robotics Initiative

Recent Publications (+70 peer-reviewed papers)

- Miner, G.L, J.M. Ham, and G.J. Kluitenberg. 2017 A heat-pulse method for measuring sap flow in corn and sunflower using 3D-printed sensor bodies and low-cost electronics. *Agric. Forest Meteorol.* 246:86-97.
- Peterson, K.W., D. J. Bremer, K. B. Shonkwiler and J. M. Ham. 2017. Measurement of Evapotranspiration in Turfgrass: A Comparison of Techniques. *Agronomy J.* doi:10.2134/agronj2017.02.0088
- Li, Y., Thompson, T. M., Van Damme, M., Chen, X., Benedict, K. B., Shao, Y., Day, D., Boris, A., Sullivan, A. P., Ham, J., Whitburn, S., Clarisse, L., Coheur, P.-F., and Collett Jr., J. L. 2017. Temporal and spatial variability of ammonia in urban and agricultural regions of northern Colorado, United States, *Atmos. Chem. Phys.*, 17, 6197-6213.
- Von Fischer, J., Cooley, D., Chamberlain, S., Gaylord, A., Griebenow, C. , Hamburg, S., Salo, J., Schumacher, R., Theobald, D., Ham, J.M. 2017. Rapid, Vehicle-Based Identification of Location and Magnitude of Urban Natural Gas Pipeline Leaks. 2017. *Environ. Sci. & Tech.* 51:4091-4099.
- Hengen, T. J., H. L. Sieverding, N. A. Cole, J. M. Ham, and J. J. Stone. 2016. Eco-Efficiency Model for Evaluating Feedlot Rations in the Great Plains, United States. *J. Environ. Qual.* 45:1234-1242. doi:10.2134/jeq2015.09.0464
- Saseendran, S., Trout, T., Ahuja, L., Ma L., McMaster, G., Neilson, D., Andales, A., Chaves J., Ham, J. 2015. Quantifying crop water stress factors from soil water measurements in a limited irrigation experiment. *Agricultural Systems.* 137:191-205.
- Saseendran, S., Trout, T. J., Ahuja, L. R., Ma, L., McMaster, G. S., Andales, A. A., Chavez, J. L., Ham, J. M. 2013. Enhancing the Water Stress Factors for Simulation of Corn in RZWQM2. *Agron. J.* 106: 81-94.
- Sun, K., L. Tao, D. Miller, M Zondlo, K Shonkwiler, C Nash, and J. Ham. 2015. Open-path eddy covariance measurements of ammonia fluxes from a beef cattle feedlot. *Agric. For. Meteorology.* 213:193-202.

Other Publications

- Brunsell, N. A., J. M. Ham and K. A. Arnold. 2011. Validating remotely sensed land surface fluxes in heterogeneous terrain with large aperture scintillometry. *Inter. J. Remote Sensing*, Vol. 32, No. 21, 6295–6314.
- Nippert J.B., T.W. Ocheltree, A.M. Skibbe, L.C. Kangas, J.M. Ham, K.B. Shonkwiler Arnold, and N.A. Brunsell. 2011. Linking plant growth responses across topographic gradients in tallgrass prairie. *Oecologia* 166:1131–1142.
- Baum, K.A., and J.M. Ham. 2009. Adaptation of a speciation sampling cartridge for measuring ammonia flux from cattle feedlots using relaxed eddy accumulation. *Atmospheric Environment.* 43:1753-1759.
- Ham, J.M., and K.A. Baum. 2009. Measuring seepage from waste lagoons and earthen basins with an overnight water balance test. *Transactions ASABE.* 52: 835-844.
- Baum, K. A., J. M. Ham, N. A. Brunsell, and P. I. Coyne. 2008. Surface boundary layer of cattle feedlots: implications for air emission measurement. *Agricultural and Forest Meteorology.* 148:1882-1893.
- Bremer, D.J., and J.M. Ham. 2005. Measurement and Partitioning of In situ CO₂ Fluxes in Turfgrasses Using a Pressurized Chamber. *Agron. J.* 97:627-632.
- Ham, J.M., and E.J. Benson. 2004. On the construction and calibration of dual probe heat capacity sensors. *Soil Sci. Soc. Am. J.* 68:1185-1190.
- Kluitenberg, G.J., and J.M. Ham. 2004. Improved theory for calculating sap flow with the heat pulse method, *Agric. Forest Meteorol.*, 126:169-173.