

Mark D. Coleman

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Department of Forest, Rangeland and Fire Sciences
College of Natural Resources, University of Idaho
Moscow, ID 83844-1133

Education and Training

Colorado State University	Forest Biology	B.S.	1979
University of Nebraska, Lincoln	Forestry	M.S.	1983
University of Washington	Forest Resources	Ph.D.	1988

Research and Professional Experience

2014 – Present. Professor, Rangeland and Fire Sciences Dept, University of Idaho, Moscow, ID
2009 to 2021, Idaho Site Director for Center for Advanced Forest Systems (CAFS)
2008 – 2020. Director of Intermountain Forestry Cooperative, University of Idaho, Moscow, ID
2008 – 2014. Associate Professor Forestry and Director of Intermountain Forest Tree Nutrition Cooperative, University of Idaho, Moscow, ID
1998 – 2008. Biological Scientist, USDA Forest Service, Southern Res. Station, Aiken, SC
1990 – 1998. Research Plant Physiologist USDA Forest Service, North Central Research Station, Rhinelander, WI and Research Scientist, Michigan Technological University, School of Forestry, Houghton, MI
1983 – 1989. Graduate Research Assistant and Postdoctoral Research Associate, University of Washington, College of Forest Resources, Seattle, WA
1981 – 1983. Research Forester, International Paper Co., Natchez Forest Research Ctr, Natchez, MS

Teaching Experience

2020-2021	Forest Production Ecology	2011	Forest dynamics and Management
2018-2020	Belowground Processes	2009-2012	Forest and Soil Nutrient Cycling
2013-2018	Scientific Manuscripts Preparation	2010	Forests, bioenergy and carbon
2013-2018	Soil and Canopy Processes		

Professional Activities

1. Developing truffle research program: 1) With US Forest Service on genetic characterization of truffle, and 2) with truffle growers to use genetics approaches to monitor ectomycorrhizal responses to irrigation and mulching treatments in truffle orchards.
2. Working collaboratively with Beijing Forestry University as guest scientist involving teaching, advising and research projects throughout China that are centered around productivity processes of intensively managed poplar plantations.
3. Idaho Site Director for NSF IUCRC titled Center for Advanced Forest Systems (CAFS).
4. Director of the Intermountain Forestry Co-op consisting of private, state, and federal landowners .
5. Director of short rotation woody crops cooperative research program lead by US Forest Service, and included forest industry support for intensive forest management practices including irrigation, fertilization on stand and watershed scales
6. Developed teaching material for classes on Forest & Soil Nutrient Cycling and Forestry, Bioenergy and Carbon to complement other biophysical ecosystem management and bioenergy curriculum at the University of Idaho.
7. Current member of North American Truffle Growers Association, Ecological Society of America, Soil Science Society of America,. Peer reviews for over 45 journals and 13 funding programs. Consistent role in forestry extension programs. Regular assignments to department and university committees.

Grants

- Coleman, M.D, Nelson, A.S. Phase III IUCRC University of Idaho: Center for Advanced Forestry Systems. \$500,000, NSF, Industrial/University Cooperative Research Center. Dec 2019-Dec 2024
- Coleman, M.D., A. McDonald, J. Sarauer. Nutrient leaching potential from western forests growing at maximum productivity along a time series of water reclamation facilities. USDA, NIFA. \$500,000. May 2020-May 2024
- Beckman, P, Coleman, M, Michaels, T. Establish best practices for growing truffles and increasing truffle yields in Idaho truffle orchards. USDA Specialty Crop Block Grant, \$178,441, December 2019 to September 2021.
- Kimsey, M.J. T.M. Shaw, M. Coleman. Herbicide Effects on Outplanted Conifer Seedlings Grown in Different Soil Parent Materials. \$104,388. Hancock Forest Management, Molpus Timberlands Management, Stimson Lumber Company, Potlatch Forest Holdings. 2015-2018
- Coleman, M., Klopfenstein, N. B. Genetic characterization of fungi associated with forest and nursery ecosystems. \$ 17,964 USDA Forest Service 2016-2018
- Coleman, M., Rust, M., Center for Advanced Forestry Systems Phase II, University of Idaho site \$225,000, NSF, IUCRC, 2015-2020.
- O’Laughlin, J., Coleman, M., Brooks, R., Keefe, R. Bioenergy Alliance Network of the Rockies (BANR). \$1,063,530 USDA-NIFA-AFRI Sustainable Bioenergy, (subcontracted through Colorado State University), 2014 –2018.
- McDonald, A.M. Brooks, R.H. Coleman, M.D. Washington DNR Mobile Pyrolysis Demonstration Project. \$18,261. Washington Department of Natural Resources.
- Coleman, M.D., Cook, S., Page-Dumroese, D.S., Linder, D., Jurgensen, M. Impacts of Forest Biomass Removal on Soil Quality and Biodiversity. \$499,009. USDA-NIFA-AFRI Regional Approaches to Sustainable Bioenergy, 2012 –2016.
- Coleman, M., Newcombe, G. Systems for Advanced Biofuels Production from Woody Biomass in the PNW, \$1,100,000, USDA-NIFA-AFRI Regional Approaches to Sustainable Bioenergy (subcontracted through University of Washington), 2011 –2016.
- Coleman, M., Rust, M., Newcombe, G. Cook, S. Center for Advanced Forestry Systems Phase I, University of Idaho site \$410,000, NSF, IUCRC, 2010-2015.
- Page-Dumroese. D. Coleman, M., Gessler, P., Mandzak, J., McClintock, K, Lewis, R., Hoover D. Developing Geospatial Site Type Classification Systems for Forest Nutrition Management \$150,000, USDA Forest Service Agenda 2020 Sustainable Forestry Research, 2008-2011.
- Page-Dumroese. D. Coleman, M., Archuleta, J. , Badger, P., Chung, W., Venn T. Sustainable forest bioenergy production using in-woods fast-pyrolysis conversion including bio-oil production and bio-char incorporation, \$150,000, USDA Forest Service Biomass Research, 2008-2010
- Coleman, M., Page-Dumroese, D. Bio-char incorporation into forest soils: Belowground responses \$74,992, American Recovery and Reinvestment Act, 2009-2011
- Trettin, C., M. Coleman, D. Amatya, T. Callahan, and M. Kane. Soil Productivity and Nutrient Management of Mid-Rotation Sweetgum and Sycamore SRWC Plantations. USDA Forest Service Funds Agenda 2020 Sustainable Forestry Research 2005-2008.
- Trettin, C, M. Coleman, D. Amatya, M. Burke. Comprehensive fire effects of biomass reduction and fire for fuels and ecosystem enhancement on a first-order watershed in the southeastern wildland-urban interface. USDA Forest Service, Joint Fire Sciences Program. 2005-2007.
- Coleman, M.D. Mid-Rotation Fertilization of Minnesota Hybrid Poplar Plantations and the Evaluation of Nutrient Balance. WesMin RC&D. (\$84,663) May 2000 – December 2003.
- Coleman, M.D. and J.G. Isebrands. Intensive fertilization of a commercial poplar plantation. Cooperative Research and Development Agreement with Boise Cascade Corporation (\$59,317), June, 1997 - December, 2000.
- Friend, A.L. and Coleman, M.D. Nitrogen Controls over Tree Root Production. USDA, National Research Initiative, #9700732 (\$200,000), July, 1997 - December, 1999.

Refereed publications (past 4 years)

- Fu, J., S. Zou, M. Coleman, X. Li, W. Hu, A. Wang, P. Zhang, Z. Zeng, C. Ding, B. Xi and N. Di. 2022. Is it necessary to apply chemical weed control in short-rotation poplar plantations on deep soil sites? *Industrial Crops and Products*. 184:115025.
- Liu, J., D. Li, J.-E. Fernández, M. Coleman, W. Hu, N. Di, S. Zou, Y. Liu, B. Xi and B. Clothier. 2022. Variations in water-balance components and carbon stocks in poplar plantations with differing water inputs over a whole rotation: implications for sustainable forest management under climate change. *Agricultural and Forest Meteorology*. 320:108958.
- Xi, B., B. Clothier, M. Coleman, J. Duan, W. Hu, D. Li, N. Di, Y. Liu, J. Fu, J. Li, L. Jia and J.-E. Fernández. 2021. Irrigation management in poplar (*Populus* spp.) plantations: A review. *Forest Ecology and Management*. 494:119330.
- Stanton BJ, Bourque A, Coleman M, Eisenbies M, Emerson RM, Espinoza J, Gantz C, Himes A, Rodstrom A, Shuren R, R. Stonex, T. Volk, J. Zerpa 2020. The practice and economics of hybrid poplar biomass production for biofuels and bioproducts in the Pacific Northwest. *BioEnergy Research*. 10.1007/s12155-020-10164-1
- Shan S, Coleman MD (2020) Biochar influences nitrogen availability in Andisols of north Idaho forests. *Sn Applied Sciences*. 2:362. DOI: 10.1007/s42452-020-2156-y
- Sherman LA and Coleman MD (2020). Forest soil respiration and exoenzyme activity in western North America following thinning, residue removal for biofuel production, and compensatory soil amendments. *Global Change Biology-Bioenergy* 12:223-236. DOI:10.1111/gcbb.12668
- Mukherjee, A and Coleman MD (2020). Converting conventional agriculture to poplar bioenergy crops: Soil chemistry. *Communications in Soil Science and Plant Analysis* 51:364-379. DOI: 10.1080/00103624.2019.1709485
- Sarauer JL, Coleman MD (2019) Douglas-fir seedling quality in biochar-amended peat substrates *Reforesta*. 7:1-14. DOI: <https://doi.org/10.21750/REFOR.7.01.63>
- Sarauer, J. L., & Coleman, M. D. 2018. Converting conventional agriculture to poplar bioenergy crops: Soil greenhouse gas flux. *Scandinavian Journal of Forest Research*. doi:10.1080/02827581.2018.1506501
- Coleman, M. D., & Aubrey, D. P. (2018). Stand development and other intrinsic factors largely control fine-root dynamics with only subtle modifications from resource availability. *Tree Physiology*. doi:10.1093/treephys/tpy033
- Cram, M. M., Coyle, D. R., Spaine, P., Lumpkin, S. V., & Coleman, M. D. (2018). Fertilization and irrigation effect on Botryosphaeriaceae canker development in intensively managed sweetgum (*Liquidambar styraciflua*). *Tree Planter's Notes*, 61(1), 26-34.
- Sarauer, J. L., & Coleman, M. D. (2018). Biochar as a growing media component for containerized production of Douglas-fir. *Canadian Journal of Forest Research*, 48(5), 581-588. doi:10.1139/cjfr-2017-0415
- Sherman, L. A., Page-Dumroese, D. S., & Coleman, M. D. (2018). Idaho forest growth response to post-thinning energy biomass removal and complementary soil amendments. *GCB Bioenergy*, 10(4), 246-261. doi:10.1111/gcbb.12486
- Parent D, Coleman M. 2016. Grand Fir Nutrient Management in the Inland Northwestern USA. *Forests* 7(11): 261.

Relevant non-refereed publications

- Coleman, M. D., Dickson, R. E., & Isebrands, J. G. (2018). Data from: Contrasting fine-root production, survival and soil CO₂ efflux in pine and poplar plantations. Retrieved from: <https://doi.org/10.5061/dryad.m7d9414>
- Page-Dumroese DS, Coleman M, Thomas SC 2016. Opportunities and uses of biochar on forest sites in North America. In: Bruckman VJ, Varol EA, Uzun BB, Liu J eds. *Biochar: a regional supply chain approach in view of climate change mitigation*: Cambridge University Press, 315-335.

- Isebrands J.G., Aronsson P, Carlson M, Ceulemans R, Coleman M, Dickinson N, Dimitriou J, Doty S, Gardiner E, Heinsoo K, Johnson JD, Koo YB, Kort J, Kuzovkina J, Licht L, McCracken AR, Mcivor I, Mertens P, Perttu K, Riddeii-Biack D, Robinson B, ScarasciaMugnozza G, Schroeder WR, Stanturf J, Volk TA, Weih M (2014) Environmental Applications of Poplars and Willows In: Isebrands JG, Richardson J (eds) Poplars and Willows: Trees for Society and the Environment. FAO, Rome, pp 258-336.
- McElligott, K., D. Page-Dumroese and M. Coleman. 2011. Bioenergy production systems and biochar application in forests: potential for renewable energy, soil enhancement, and carbon sequestration. Res. Note RMRS-RN-46. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, CO. 14 p.
- Reeves, D.A., D.S. Page-Dumroese and M.D. Coleman. 2011. Detrimental soil disturbance associated with timber harvest systems on National Forests in the Northern Region. Res. Pap. RMRS-RP-89 Ed. F.S. U.S. Department of Agriculture. Rocky Mountain Research Station, Fort Collins, CO, p 12.
- Coleman, M., D. Page-Dumroese, J. Archuleta, P. Badger, W. Chung, T. Venn, D. Loeffler, G. Jones and K. McElligott 2010. Can portable pyrolysis units make biomass utilization affordable while using bio-char to enhance soil productivity and sequester carbon? . In Proceedings of the National Silviculture Workshop, Boise Idaho June 2009 Eds. R. Graham and T. Jane. USDA Forest Service, Rocky Mountain Research Station, Ft. Collins, CO.
- Giardina, C.P., M.D. Coleman, D. Binkley, J.E. Hancock, J.S. King, E.A. Lilleskov, W.M. Loya, K.S. Pregitzer, M.G. Ryan, and C.C. Trettin 2005, The response of belowground carbon allocation in forests to global change, In Tree species effects on soils: implications for global change, D. Binkley and O. Menyailo, Editors, Kluwer Academic Publishers: Dordrecht. p. 119-154.
- Coleman M.D., D.R. Coyle, J. Blake, K. Britton, M. Buford, R.G. Campbell, J. Cox, B. Cregg, D. Daniels, M. Jacobson, K. Johnsen, T. McDonald, K. McLeod, E. Nelson, D. Robison, R. Rummer, F. Sanchez, J. Stanturf, B. Stokes, C. Trettin, J. Tuskan, L. Wright., and S. Wullschleger 2003. Production of short rotation woody crops grown with a range of nutrient and water availability: Establishment report and first-year responses. General Technical Report, SRS- 72. U.S. Department of Agriculture, Forest Service, Asheville, NC.
- Callahan, T.J., J.D. Cook, M.D. Coleman, D.M. Amatya,, and C.C. Trettin. Modeling storm water runoff and soil interflow in a managed forest, Upper Coastal Plain of the Southeast US. In: ASAE Annual Meeting; 2004; Ottawa, Ontario, Canada. Paper 042254.
- Stanturf, J.A., C. van Oosten, D.A. Netzer, M.D. Coleman, and C.J. Portwood. Ecology and silviculture of poplar plantations. In: D.I. Dickmann, J.G. Isebrands, J.E. Eckenwalder, and J. Richardson, editors. Poplar culture in North America. . National Research Council, Ottawa; 2001. p153-206.
- Coleman, M.D. Short rotation woody crops cooperative research program. In: Proceedings of the Short Rotation Woody Crops Operations Working Group Third Biennial Conference: 2000 October 10-13; Syracuse, NY; 2001.