

**Karen Updegraff**

Permanent Address:

1391 Hiironen Rd.

Brimson MN 55602

(218)848-2814 (home and home office); (605)394-1989 (office in SD)

email: kupdegraff@c-locktech.com OR karen@brimson.com

September 23, 2008

## Education and Training

**PhD Natural Resources Management and Policy.** University of Minnesota, St. Paul, Minnesota, 2002. Dissertation: Valuing the Environmental Impacts of Short Rotation Woody Crops.

**MS Forest Resources.** University of Minnesota, St. Paul, Minnesota, 1988. MS Thesis: Nitrogen Budget in a Hybrid Poplar Plantation.

**BA Biology** (with Honors), Earlham College, Richmond, Indiana, 1981. Concentration in plant biology and ecology.

**Peace Corps Technical Training,** Ouahigouya, Burkina Faso, 1981. Semi-arid lands reforestation, soil conservation and management techniques, and rural extension methodology.

## Appointments:

**Research Scientist,** C-Lock Technology, Rapid City, SD. . Oct 2007 –. Research and development related to decision-support and marketing systems for agricultural carbon emission reduction credits. Broad project management responsibilities, including technical, policy and outreach aspects, as well as proposal development, publications and presentations.

**Research Scientist,** South Dakota School of Mines and Technology, Institute of Atmospheric Sciences. Feb 2003 – Sep 2008.

Implementation and extension of C-Lock (pat pending), a decision-support and marketing system for agricultural carbon emission reduction credits. Broad project management responsibilities, including technical, policy and outreach aspects, as well as proposal development, publications and presentations. Other responsibilities have included curriculum development and teaching.

**Forester, GS 11** (temp. part-time), North Central Research Station, Grand Rapids, MN. Feb 2002 – Aug 2002.

Conversion of legacy Experimental Forest data into database (MySQL) formats and the development of a Web-based data access system using XHTML and PHP.

**Research Assistant**, University of Minnesota, College of Natural Resources. Sept 1998 – Aug 2002.

Responsibilities included the administration, analysis and reporting of surveys regarding landowner attitudes and implementation of the Forest Stewardship program, emerging issues according to US SAF members, forest harvesting BMPs, and the costs and benefits of small-scale forest harvesting equipment.

**Research Fellow**, Assistant Scientist, Natural Resources Research Institute, University of Minnesota, Duluth, MN, March 1990– Sept 1998. Developed and implemented projects investigating climate effects on carbon and nutrient fluxes from northern wetlands, including a long-term wetland mesocosm installation examining the effects of temperature and water table on ecosystem processes and microclimate in boreal peatlands.

**Research Assistant and Consultant**, University of Minnesota Technical College Crookston, MN, January 1987-July 1988. Analyzed nitrogen pools and fluxes in a pilot-scale hybrid poplar plantation as part of a short-rotation biomass cash cropping project.

**Research Assistant**, SUNY College of Environmental Science and Forestry, Syracuse, NY, September 1985 - August 1986. Developed a soil/site evaluation guide to aid landscape planners in the selection of appropriate plantings and in predicting potential site problems.

**Research Technician**, Carleton College Dept. of Biology, Northfield, MN; January 1984 - January 1985. Investigations in algal chemotaxis.

**Forester**, US Peace Corps, Barsalogo, Burkina Faso, W. Africa; July 1981 - October 1983. Implemented a USAID-funded village woodlot project, including the development of a forestry extension program to encourage small-scale woodlot, windbreak and soil conservation efforts. Established a sub-regional nursery, facilitated local “mini-nursery” initiatives, and helped compile a reforestation manual for use by extension agents.

LANGUAGES: French (fluent), Turkish.

## Selected Publications

- Updegraff, K., P. Zimmerman, M. Price and W.J. Capehart. 2005. C-Lock: an online system to standardize the estimation of agricultural carbon sequestration credits. *Journal of Fuel Processing Technology Special Issue: Carbon Dioxide Capture and Sequestration* 86:1695–1704
- Updegraff, K., M.J. Baughman and S.J. Taff. 2004. Environmental benefits of cropland conversion to hybrid poplar: economic and policy considerations. *Biomass and Bioenergy* 27:411–428.
- Updegraff, K., P. Gowda and D.J. Mulla. 2004. Watershed-scale modeling of the water quality effects of cropland conversion to short rotation woody crops. *Renewable Agriculture and Food Systems* 19:118-127.
- Updegraff, K., S.D. Bridgham, J. Pastor, P. Weishampel and C. Harth. 2001. Response of CO<sub>2</sub> and CH<sub>4</sub> emissions from peatlands to warming and water table manipulation. *Ecological Applications* 11:311–326.

- Updegraff, K., S.D. Bridgham, J. Pastor and P. Weishampel. 1998. Hysteresis in the temperature response of carbon dioxide and methane production in peat soils. *Biogeochemistry* 43:253–272.
- Updegraff, K., J. Pastor, S.D. Bridgham and C.A. Johnston. 1995. Environmental and substrate quality controls over carbon and nitrogen mineralization in northern wetlands. *Ecological Applications* 5:151-163.
- Updegraff, K., J. Pastor, S.D. Bridgham and C.A. Johnston. 1994. A method to determine long-term anaerobic carbon and nutrient mineralization in soils. pp. 209-219 *In: J.Doran, D. Bezdicsek and D. Coleman, eds. Defining Soil Quality for a Sustainable Environment.* Soil Science Society of America, Madison, WI.
- Updegraff, K., D. Zak and D. Grigal. 1990. The nitrogen budget of a hybrid poplar plantation in Minnesota. *Canadian Journal of Forest Research* 20:1818-1822.
- Zimmerman, P., M. Price, C. Peng, W.J. Capehart, K. Updegraff, P. Kozak, L. Vierling, E. Baker, F. Kopp, G. Duke and C. Das. 2005. C-Lock (patent pending): a system for estimating and certifying carbon emission reduction credits for the sequestration of soil carbon on agricultural land. *Mitigation and Adaptation Strategies for Global Change* 10: 307–321.
- Zimmerman, P.R., K. Updegraff, W.J. Capehart, M. Price and L.A. Vierling. 2005. C-Lock: a method to maximize carbon sequestration value to agro-forestry producers and purchasers. *In GreenTrading<sup>TM</sup> Markets: Developing the Second Wave.* Ed. P.C. Fusaro and M. Yuen. Green Trading Inc., NY. p. 131–150.
- Baughman, M.J., K. Updegraff and J.C. Cervantes. 2001. Motivating forest landowners in the North Central United States. *In: Proceedings, IUFRO Forestry Extension Symposium.* Lorne, Australia, Oct. 29 – Nov. 2. Online: [www.anu.edu.au/Forestry/IUFROFE2001/proceedings.pdf](http://www.anu.edu.au/Forestry/IUFROFE2001/proceedings.pdf). pp. 24–34.
- Bridgham, S.D., K. Updegraff and J. Pastor. 2001. A comparison of nutrient availability indices along an ombrotrophic-minerotrophic gradient in Minnesota wetlands. *Soil Science Society of America Journal* 65:259-269.
- Bridgham, S.D., K. Updegraff and J. Pastor. 1998. Carbon, nitrogen and phosphorous mineralization in northern wetlands. *Ecology* 79:1545-1561.
- Sen, K.M.,K. Updegraff, and L. Vitelli. 1984. *Les Arbres et Arbustes*, Burkina Faso. P.E.D.I. Ouagadougou, Burkina Faso.