

**Bioenergy, Sustainability, and Land-Use Change Report
Oak Ridge National Laboratory (ORNL) April 2012**

ORNL Publications

Journal articles:

Dale VH, Kline KL, Kaffka SR, and Langeveld JWA. A landscape perspective on sustainability of agricultural systems. *Landscape Ecology*. Submitted to journal

Efroymson, R. A., V. H. Dale, K. L. Kline, A. C. McBride, J. M. Bielicki, R. L. Smith, E. S. Parish, P. E. Schweizer, D. M. Shaw. Environmental indicators of biofuel sustainability: What about context? *Environmental Management*. Resubmitted in response to review comments

Parish ES, , RA Efroymson, VH Dale, KL Kline, AC McBride, T Johnson, MR Hilliard, JM Bielicki, A multi-scale comparison of environmental effects from gasoline and ethanol production. *Environmental Management*. Submitted to journal

Wang, G., W. M. Post, M. A. Mayes, J. T. Frerichs, and S. Jagadamma. 2012. Parameter estimation for models of ligninolytic and cellulolytic enzyme kinetics. *Soil Biology and Biochemistry* **48**:28-38.

Wang, G., and W. M. Post. 2012. A theoretical reassessment of microbial maintenance and implications for microbial ecology modeling. *FEMS Microbiology Ecology* (in press).

Abstracts:

Dale VH. 2012. "Environmental and socioeconomic indicators of bioenergy sustainability" Abstract accepted for symposium on "Bioenergy and Biodiversity: Oxymoron or Opportunity?" to be held at Ecological Society of America (ESA) Annual Meeting in Portland, Oregon.

Kline KL. 2012. "Models, causal analysis and scientific methods for understanding land-use change (LUC) dynamics." Abstract accepted for Ecological Society of America (ESA) Annual Meeting in Portland, Oregon.

Schweizer P, H. Jager, L. Eaton, and R. Efroymson. 2012. "Ecosystem Goods and Services: Monetizing Fish Species Richness in Ecosystem Valuation." Abstract accepted for the 6th Annual International Ecosystem Services Partnership (ESP) Conference in Portland, Oregon.

ORNL Presentations:

April 8-12, 2012 – Peter Schweizer presented "Monetizing fish richness at spatial scales relevant to ecology and resource management" at the 2012 US-IALE Annual meeting that was held in Newport, RI. Co-authors are Laurence Eaton, Yetta Jager and Rebecca Efroymson.

April 10 – Matt Langholtz presented at the 2012 Oklahoma Experimental Program to Stimulate Competitive Research (EPSCoR) Annual State Conference on Bioenergy in Stillwater, Oklahoma.

<http://www.okepsc.org/public-outreach/news/save-date-2012-oklahoma-epscor-annual-state-conference>

April 12 – Keith Kline presented “GHG Time Accounting: ‘Trying to make it real, compared to what?’” for the International Energy Agency (IEA) Task 38 Expert Work Group on Bioenergy GHG emission accounting, Argonne, IL.

April 16 – Maggie Davis and co-conveners of the ISO Working Group made a presentation for international plenary meeting off ISO PC 248, Sustainability Criteria for Bioenergy, at Argonne National Lab, summarizing a final report on indirect effects.

April 24 – Virginia Dale and Paul Leiby presented “Indicators to support assessment of socioeconomic sustainability of bioenergy system” to the DOE workshop in Washington, DC on Social Aspects of Bioenergy Sustainability. The presentation was based on the a paper developed by VH Dale, RA Efrogmson, KL Kline, MH Langholtz, PN Leiby, GA Oladosu, MR Davis, ME Downing, and MR Hilliard.

April 25, 2012 – Matt Langholtz presented “Billion-ton update: An Overview” at the 4th Annual EBI Biofuels Conference in Illinois.

April 30: ORNL contributions to the 34th Annual SIM conference in New Orleans

- **Posters:**
 - “Scientific Approaches for Assessing Land-Use Change” - Keith Kline, Gbadebo Oladosu, Virginia Dale, Allen McBride.
 - “Estimating the Benefits and Costs of Sustainable Corn Stover Production” – Laurence Eaton, Virginia Dale, Mark Downing, Matthew Langholtz, David Muth, Bob Perlack.
- **Presentations** that are part of a session chaired by Kelly Tiller entitled “Biomass Supply & Sustainability” on the opening day.
<http://sim.confex.com/sim/34th/webprogrampreliminary/Session2137.html>
 - “Indicators to Support Environmental and socioeconomic Sustainability of Bioenergy Systems” – Virginia H. Dale, Latha M. Baskaran, Maggie R. Davis, Mark E. Downing, Laurence M. Eaton, Rebecca A. Efrogmson, Charles T. Garten Jr., Michael R. Hilliard, Keith L. Kline, Henriette I. Jager, Matthew H. Langholtz, Paul N. Leiby, Allen C. McBride, Patrick J. Mulholland, Gbadebo A. Oladosu, Esther S. Parish, Peter E. Schweizer, and John M. Storey
 - “The U.S. Billion Ton Update: Biomass Supply for a Bioenergy and Bioproducts Industry” – Laurence Eaton, Bob Perlack, Bryce Stokes et al.

ORNL CBES Forum:

April 19 – John Schwartz (UT) and Zachariah Seiden (UT) presented “Study Design for Water Quality Monitoring from Switchgrass Fields near Vonore, Tennessee: Support for SWAT and BLOSM Models”. This presentation can be accessed at the CBES website under forums:

<http://www.ornl.gov/sci/ees/cbes/forums.shtml>

Other ORNL Activities:

April 11: Esther Parish and Laurence Eaton met with Sam Jackson, Mladen Grbovic and Jessica McCord at the University of Tennessee's Center for Renewable Carbon in order to discuss progress related to the development of an online Biomass Atlas for the Southeast Region and a GIS data depository for ongoing research related to the Vonore, TN switchgrass experiment.

April 12-13: Keith Kline helped draft initial content and outline for a white paper being developed on "Reference systems for evaluating climate effects of bioenergy" as an outcome of the Expert Working Meeting of IEA Task 38 at Argonne on "How to present the timing of emissions from bioenergy in LCA and GHG accounting?"

April 16-20, 2012 - Keith Kline and Maggie Davis participated in the ISO Project Committee 248 meetings on a standard on "Sustainability Criteria for Bioenergy" at Argonne National Lab. The plenary sessions accepted key language on indirect effects and nominated Kline to serve as lead editor for the next "Committee Draft" version of the standard.

April 24—Virginia Dale, Keith Kline, Paul Leiby, Gbadebo Oladosu, and Rebecca Efrogmson attended the DOE workshop in Washington, DC, on Social Aspects of Bioenergy Sustainability.

Upcoming ORNL Visits/Events:

May 1-2: Keith Kline will make two presentations and facilitate discussions as an invited speaker in the "Sustainable Energy Symposium" hosted by Kansas State University.

May 14-15 – Keith Kline is invited to speak at the World Renewable Energy Forum (WREF) in a session titled, "Impacts of Renewable Fuels: Environmental, Social and Economic Sustainability" in Denver, CO.

May 21-25 – ORNL will host Marcello Moreira, a representative from ICONE, to compare parameters of GTAP-DPS and BLUM models, a first step in linking these two models for improved LUC modeling and analysis.

May 29-31 – Virginia Dale and Keith Kline are invited to attend the first workshop of the Research Coordination Network on Pan American Biofuels and Bioenergy Sustainability hosted by Dr. Mario Ruz at UNAM-CEPHCIS in Merida, Yucatan, Mexico.

June 7-11: ORNL will host Ariel Rodriguez and Edgar Castillo from the Colombian Petroleum Institute who will present at a special CBES forum titled "Energy Diversification Program at Ecopetrol" topics on Advanced Biofuels, Heat and Power Generation from Biomass and Renewables (Proposal) and Energy Efficiency in upstream operations" will be discussed.

June 10-13 – Matt Langholtz and Laurence Eaton will present a poster titled "Integrating Microalgae Biofuel Production Potential into Biomass Resource Assessment" at the 2nd International Conference on Algal Biomass, Biofuels and Bioproducts in San Diego, CA.

June 20- Keith Kline has been invited to participate in a panel at the Bio International Convention (BIO 2012) on “Sustainability & GHG Certification Schemes – Key Industry Actions Towards a Level Playing Field” in Boston, MA. <http://convention.bio.org/>

July 23-24 - Esther Parish has submitted an abstract entitled “Designing Bioenergy Cropping Systems to Maximize Sustainability Objectives” to the upcoming workshop on “Visualization Technologies to Support Research on Environment Interactions” that will be held in Annapolis, Maryland by the National Socio-Environmental Synthesis Center (SESYNC). If selected to participate, Esther’s travel expenses will be paid by SESYNC through a grant from the National Science Foundation.

July 24 – ORNL will host Ghobah Rahrooh, Woody Keown, Robert Rohrbaugh, Rainer Cina, Phil Green and Ryan West from Proctor and Gamble to emphasize: Feedstock Assessment and Sustainability Metrics.

August 5-10, 2012 – Several ORNL staff will participate in the 2012 Ecological Society of America (ESA) Annual Meeting in Portland, Oregon.

- A Special Session, "A Debate on the Sustainability of Biomass Production for Energy", will focus on the proposition “Producing bioenergy can be sustainable for habitat availability and biodiversity, and can eschew the risk of new invaders.” This formal debate will allow opening statements by each of six experts, followed by rebuttals, with audience questions entertained during the final 30 minutes. The audience will be polled before and after to determine the winners. H. Jager is an organizer and R. Efroymson will represent the “for” position.
- Virginia Dale will speak in the Symposium "Bioenergy and Biodiversity: Oxymoron or Opportunity?" on “Environmental and socioeconomic indicators of bioenergy sustainability.”
- Keith Kline will speak on “Models, causal analysis and scientific methods for understanding land-use change (LUC) dynamics.”

October 2012 - Virginia Dale is serving as a member of the Conference Programming Committee for the "Science for Biomass Feedstock Production and Utilization National Conference" to be held in October 2012 in New Orleans and sponsored by the Sun Grant Initiative. <http://www.sungrant.org/News+and+Events/2012+National+Conference.htm>

November 5-8 – The 9th Biennial Short Rotation Woody Crops Operations Working Group will meet in Oak Ridge and Knoxville, Tennessee.