

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

**ORNL Publications:**

Dale, VH, MH Langholtz, BM Wesh, and LM Eaton. In review. Environmental and socioeconomic indicators for bioenergy sustainability as applied to Eucalyptus. *International Journal of Forestry Research*.

Efroymsen, 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. 2012 online. Environmental indicators of biofuel sustainability: What about context? *Environmental Management* DOI 10.1007/s00267-012-9907-5.

Patton-Mallory M, KE Skog, VH Dale. 2013. Integrated forest biorefineries: Sustainability considerations for forest biomass feedstocks. In (L. Christopher, ed.) *Integrated Forest Biorefineries*. Royal Society of Chemistry, London, England, pp. 38-55. – galley received.

Rubin, Jonathan and Paul N. Leiby. 2012. “Tradable Credits System Design and Cost Savings For A National Low Carbon Fuel Standard For Road Transport,” *Energy Policy*, in press.

Leiby, Paul N., and Jonathan Rubin. 2012. “Energy Security Implications of a National Low Carbon Fuel Standard”. *Energy Policy*, in press.

**ORNL Presentations:**

July 2 – Virginia Dale and Keith Kline gave presentations on “Bioenergy Sustainability: Addressing the Science and the Need” for the DOE Biomass Program Staff meeting.

July 11 – Virginia Dale and Ben Preston participated in “Dialogue,” a weekly hour-long radio discussion on WUOT, the local radio station affiliated with National Public Radio. The discussion focused on climate change in Tennessee. <http://wuot.org/mt/archives/2012/07/000778-dialogue-climate-change-in-tennessee.html>

July 19 - Virginia Dale was the keynote speaker at the ORNL Celebration of Women in Science, and her talk was on “From Disturbance to Sustainability: Following Interesting Questions and Fun Opportunities.” Esther Parish presented a poster on “Designing Bioenergy Cropping Systems to Maximize Sustainability Objectives.”

July 19-20 – Paul Leiby presented 2 papers “Tradable Credits System Design and Cost Savings for a National Low Carbon Fuel Standard for Road Transport” and “Energy Security Implications of a National Low Carbon Fuel Standard” as part of the National Low Carbon Fuel Standard study held in Washington, DC. <http://NationalLCFSPProject.ucdavis.edu>

July 23-24 - Esther Parish presented a poster on “Designing Bioenergy Cropping Systems to Maximize Sustainability Objectives” at a 60-person workshop on “Visualization Technologies to Support Research on Environment Interactions” held in Annapolis, Maryland by the new

National Socio-Environmental Synthesis Center (SESYNC). Esther's travel expenses were paid by SESYNC through a grant from the National Science Foundation.

July 31 - Peter Schweizer presented "Ecosystem Goods and Services: Monetizing Fish Species Richness in Ecosystem Valuation" at the 5<sup>th</sup> *Annual International Ecosystem Services Partnership (ESP) Conference* in Portland, Oregon. Co-authors of the paper are Yetta Jager, Laurence Eaton and Rebecca Efrogmson.

### **ORNL Center for BioEnergy Sustainability (CBES) Forums:**

July 16 – Siwa Msangi, Senior Research Fellow from the International Food Policy Research Institute, Washington D.C., presented "Biofuels, Agriculture and Food Security: Key Connections and Challenges" at a special CBES forum. This presentation can be accessed at the CBES website under forums: <http://www.ornl.gov/sci/ees/cbes/forums.shtml>

July 26 – Danny Inman from the National Renewable Energy Laboratory (NREL) presented "Biofuel Sustainability Analysis" at a special CBES forum. This presentation can be accessed at the CBES website under forums: <http://www.ornl.gov/sci/ees/cbes/forums.shtml>

### **Other ORNL Activities:**

Virginia Dale, Laurence Eaton and Matt Langholtz contributed text, information and figures (based on the Billion Ton Update) to the forest chapter of the National Assessment of Climate Change. This chapter considers the role of forest resources in bioenergy as a way to both sequester carbon and offset fossil fuel use (which is the major contributor to increasing greenhouse gases that are affecting climate change).

July 12 – Keith Kline, Matt Langholtz, and Virginia Dale submitted a white paper to the Council on Sustainable Biomass Production (CSBP) proposing future steps for development of science-based sustainability standards.

July 13 - Keith Kline, Matt Langholtz, and Virginia Dale participated in a conference call of the Council on Sustainable Biomass Production (CSBP) on next steps in development of sustainability standards.

July 16-17 – ORNL hosted Siwa Msangi, Senior Research Fellow from the International Food Policy Research Institute, in a series of discussions that emphasized land use change and climate change modeling for assessment of biofuels production.

July 16 – Several ORNL staff participated in the residue removal analysis webinar (Doug Karlen and David Muth, presenters) which demonstrated the Stover Removal Tool.

July 20 - Oladosu, Kline and Davis submitted comments to finalize a report co-authored with Marcelo Moreira (Brazil-ICONE) titled, "Comparison of Regions and Modeling of Land in the GTAP-DEPS and BLUM." Options to improve bioenergy simulations by comparing inputs and outputs are discussed in the report, submitted to Brazil collaborators in CTBE, FAPESP and ICONE.

July 24 – ORNL hosted Woody Keown, Robert Rohrbaugh, Rainer Cina, Phil Green and Ryan West from Proctor and Gamble (P&G) in a series of discussions that emphasized feedstock assessment and sustainability metrics.

July 26 – ORNL hosted Gerald McGlamery, James Lattner and Linelle Jacob from ExxonMobil Chemical Company to discuss current outlook on biomass availability as well as biomass processing facilities. Discussion included both ORNL and University of Tennessee (UT) staff.

July 26-31: Danny Inman from the National Renewable Energy Laboratory (NREL) visited ORNL. During the visit, he explored ways to work with scientists from ORNL and UT to address the needs of the DOE's Office of the Biomass Program (OBP) in defining bioenergy sustainability baselines and targets, developing ways to assess land changes attributed to bioenergy, and conducting a watershed assessment of bioenergy effects. This last activity is being developed into a plan for a Watershed Sustainability Assessment (WASA) that will be submitted to OBP. The visit included a field trip to switchgrass fields and watershed sampling in the Lower Little Tennessee watershed as well as a tour of Genera Inc.

July 31 – Virginia Dale, Esther Parish, and Latha Baskaran delivered a 4<sup>th</sup> quarter Sustainability Joule 4 milestone report to OBP discussing ways that sustainability baselines and targets for water quality and productivity can be addressed in the Lower Little Tennessee watershed.

July 1-31 – Keith Kline and Maggie Davis participated in nine ISO PC248 webinars and submitted written proposals to improve text in the draft International Standard for Sustainability Criteria. ORNL also developed a proposed process and schedule for the Editing Committee (led by Kline).

### **Upcoming ORNL Visits/Events:**

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."

Aug 19-23 – Debo Oladosu will present "Evaluating the Economic Benefits of the Advanced Biofuels Targets under the RFS2" paper at the 244<sup>th</sup> ACS National Meeting in Philadelphia, PA.

September 18 – Rebecca Efroymson will present “Indicators to support assessment of sustainability of bioenergy systems” at the 12<sup>th</sup> International Symposium on Biosafety of Genetically Modified Organisms in St Louis, MO.

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 9<sup>th</sup> Biennial Short Rotation Woody Crops Operations Working Group will meet in Oak Ridge and Knoxville, Tennessee.

November 12-15 – Latha Baskaran will present “Modeling the effects of switchgrass management on aquatic macroinvertebrates” at the 2012 AWRA Annual Water Resources Conference in Jacksonville, FL.