

**Bioenergy, Sustainability, and Land-Use Change Report
Oak Ridge National Laboratory (ORNL) November 2011**

ORNL Publications:

Dale, V. H. and K. L. Kline. In press. Modeling for integrating science and management. Chapter 6 In D.G. Brown, N. H. F. French, B.C. Reed, and D. T. Robinson (editors), *Land Use and the Carbon Cycle: Science and Applications in Coupled Natural-Human Systems*, Cambridge University Press.

Oladosu G., K. Kline, R. Martinez and L. Eaton. 2011. Sources of Corn for Ethanol Production in the United States: A Review and Decomposition Analysis of the Empirical Data. *Biofuels, Bioprod. Bioref.* 5:640-653. <http://onlinelibrary.wiley.com/doi/10.1002/bbb.305/pdf>

Langholtz, M., Graham, R., Eaton, L., Perlack, R., Hellwinkel, C., De La Torre Ugarte, D., 2011. Price projections of feedstocks for biofuels and biopower in the U.S. *Energy Policy*. In press. <http://www.sciencedirect.com/science/article/pii/S030142151100886X>

ORNL Presentations:

November 10-11 – Virginia Dale visited Michigan Technological University as a Distinguished Ecologist lecturer in the School of Forest Resources and Environmental Science and gave a lecture on “Steps towards Bioenergy Sustainability.”

November 13-16 – Mike Hilliard presented at the Annual Meeting of the Institute for Management Science and Operations Research (INFORMS) in Charlotte, NC, on the Biomass Location for Optimal Sustainability Model (BLOSM) --Balancing Profit and Water Quality in a Watershed. His presentation will use data from the watershed surrounding a cellulosic ethanol refinery in Tennessee; an optimization model paired with results from a water quality model demonstrates that planting switchgrass in the right locations can improve nitrogen, phosphorus and sediment levels with a moderate impact on revenue. A web-based interface communicates the results.

<https://informaticsmeetingsonline.com/meetings/formbuilder/clustersessiondtl.asp?csnno=15781&mmnno=206&ppnno=57555>

November 16 -At a meeting of the Laboratory Energy R&D Working Group (LERDWG) in Washington, DC, Bob Perlack spoke about the Billion Ton Update, and Virginia Dale talked about the recent National Research Council (NRC) report "Potential Economic and Environmental Effects of U.S. Biofuel Policy."

November 17 – Virginia Dale gave a plenary talk on “Steps towards Bioenergy Sustainability” at the National Science Foundation Emerging Frontiers in Research Innovation, Resilient and Sustainable Infrastructures Program (NSF-EFRI RESIN) Workshop in Champaign, IL.

<http://ict.illinois.edu/conferences/RESINworkshop2011/>

November 18 - Efroymsen RA. Environmental Scientists: Who We Are and What We Do. Presentation to 3rd, 4th, 5th graders at Haw Creek Elementary School, Asheville, NC. (included slides on biofuels)

November 29 - Efroymson RA, Woodbury PB, DeLucia E. Improving analysis of environmental effects of bioenergy feedstock production: Identifying issues and endpoints. Presentation. Biofuels and the Environment Workshop on Environmental Assessment Endpoints for Feedstock Production. Washington, DC. (RA Efroymson prepared presentation and report as an independent consultant.)

ORNL CBES Forum:

November 17 – Four 5-10 minute panel presentations on “Sustainability Considerations for the Oak Ridge National Laboratory Biomass Steam Plant Feedstock Supply” was presented by ORNL staff; Elliott Barnett, Mark Downing, Matt Langholtz and Erin Webb. This presentation can be accessed at the CBES website under forums:

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

Other ORNL Activities:

November 2 - Virginia Dale, Allen McBride and Bruce Bunting had a conference call with Jeremy Alcorn of LMI about the work on sustainability of biofuels that LMI is conducting for the Defense Logistics Agency (DLA) related to the Defense Production Act. This topic builds from the Final NDAA FY10 Section 334 Report as adopted by the DoD and submitted to Congress that is titled "DoD Report: Opportunities for DoD use of Alternative and Renewable Fuels" - see http://energy.defense.gov/NDAA_FY10_Sec_334_Report_FINAL_85B3.pdf

November 2 – Keith Kline and Gangsheng Wang (ORNL) and Michael Wang (ANL) contributed to the 8th webinar for ISO PC 248 (Bioenergy Sustainability) WG2 – Greenhouse Gas Emission Methods – discussing a set of selected issues and developing agreement on revised language for the corresponding chapter of the report.

November 15-16—Virginia Dale participated in a Southeastern Partnership for Integrated Biomass Supply Systems (IBSS) Inaugural Charrette meeting in Knoxville to kickoff plans for this USDA-funded project that involve several universities and private companies from across the region.

November 21 – Shujiang Kang, Mac Post, Keith Kline and other staff discussed the work plan for developing a prototype global bioenergy crop model in coordination with the Global Sustainable Bioenergy (GSB) project. Initial work, supported by in-house program development funds, will focus on calibrations for switchgrass.

November 22 – Maggie Davis and Keith Kline contributed to the 11th webinar of ISO PC 248 (Bioenergy Sustainability) Working Group (WG) 4 – Indirect Effects – which focused on final two sections of the WG4 draft report on mitigation and synthesis of state of science. ORNL WG members also contributed over 40 citations (approximately 30% of all citations submitted) to the annotated bibliography that forms an integral part of the WG4 report.

November 29-December 1 – Rebecca Efroymson, Yetta Jager and Virginia Dale participated in a workshop on EPA's conceptual models, which diagram activities and potential impacts of biofuel feedstock production. These conceptual models were first developed for EPA's Biofuels and the Environment: First Triennial Report to Congress. In addition to providing written reviews of the

conceptual models, Virginia gave a brief presentation and chaired a panel discussion. Yetta presented her review of conceptual model pathways as they influence water as an endpoint.

November 29 - Y. Jager contributed to a proposal for a special session at the 2012 Ecological Society Meeting in Portland, entitled "A Debate on the Sustainability of Biomass Production for Energy". Debaters were identified and invited to represent two "sides" of three issues: 1) effects on biodiversity, 2) effects on habitat, and 3) effects on invasive species. Other organizers include Caroline Ridley (USEPA), Zakiya Leggett (Weyerhaeuser), and Chris Clark (USEPA).

Upcoming ORNL Visits/Events:

December 1- Keith Kline will give a talk on "Bioenergy and issues of sustainability" to the Environmental Protection Office (EPO) at ORNL.

December 5-9 – Virginia Dale will give a presentation on the "Land use, energy and climate change nexus" at the American Geophysical Union (AGU) Fall meeting to be held in San Francisco, CA.

February 22-24, 2012 – Virginia Dale will speak on "Environmental and socioeconomic indicators for bioenergy sustainability as applied to Eucalyptus" at symposium on "Assessment and Management of Environmental Issues Related to Eucalyptus Culture in the Southern United States". The symposium is being organized by the USDA Forest Service and the National Council for Air and Stream Improvement, Inc. (NCASI) in Charleston, SC. Matt Langholtz is assisting in the preparation of this paper.

April 16-20, 2012 - Keith Kline and Maggie Davis will participate in the second plenary meeting of the ISO Project Committee (PC248) developing a standard on "Sustainability Criteria for Bioenergy" hosted by the U.S. Technical Advisory Group at Argonne National Lab.

October 2012 - Virginia Dale will serve 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>