

## NARA Publications 2011-2013

### Refereed Publications

Zamora, R., J. Sessions, G. Murphy and K. Boston. 2013. Economic impact of truck-machine interference in forest biomass recovery operations on steep terrain. In press. *Forest Products Journal*. Published online October 2013. (doi: 10.13073/FPJ-D-13-00031)

Zamora, R., K. Boston, J. Sessions, and G. Murphy. Stochastic simulation and optimization of mobile chipping economics in processing and transport of forest biomass from residues. Accepted. *Silva Fennica*.

Long, J. and K. Boston. In press. An evaluation of alternative measurement techniques for estimating the volume of logging residues. *Forest Science*.

Beck, S. and J. Sessions. 2013. Forest road access decisions for woods chip trailers using Ant Colony Optimization and breakeven analysis. *Croatian J. of Forest Engineering* 34(2):201-215.

Leu, Shao-Yuan, R. Gleisner, R., J.Y. Zhu, J. Sessions, and G. Marrs. 2013. Robust Enzymatic Saccharification of a Douglas-fir forest harvest residue by SPORL. In press. *Biomass and Bioenergy*. Published online August 2013 (<http://dx.doi.org/10.1016/j.biombioe.2013.08.014>)

Sessions, J., K. Tuers, K. Boston, R. Zamora and R. Anderson. 2013. Pricing forest biomass for power generation. *Western J. of Applied Forestry* 28(2):51-56.

Smith, D., J. Sessions, K. Tuers, D. Way and J. Travers. 2013. Characteristics of Forest Derived Woody Biomass Collected and Processed in Oregon. *Forest Products J.* 62(7/8):520-527.

Kim, D-W. and G. Murphy. 2012. Forecasting air drying rates of Douglas-fir and hybrid poplar biomass in Oregon, USA. *International Journal of Forest Engineering*. Manuscript accepted.

Zhang, C., J.Y. Zhu, R. Gleisner, and J. Sessions. 2012. Fractionation of Forest Residues of Douglas-fir for Fermentable Sugar Production by SPORL Pretreatment. *BioEnergy Research*. 5(4):978-988. DOI: 10.1007/s12155-012-9213-3.

Zamora, R., P. Adams, and J. Sessions. Ground-based thinning on steep slopes in Western Oregon: Soil compaction and disturbance effects. *Forest Science*. Accepted.

Clark, J., Sessions and R. Zamora. Optimizing Knife Change Times for Forest Biomass Chipping Operations. *Biomass and Bioenergy*. Manuscript in review.

Zamora, R., P. Adams, and J. Sessions. Ground-based thinning on steep slopes in Western Oregon: Soil compaction and disturbance effects. *Forest Science*. Accepted.

### Conference Proceedings and Abstracts from Professional Meetings

Sessions, J. and R. Zamora. 2013. Cost-effective logistics for forest harvest residuals: the upstream part of the sugar stream. Prepared for the 2013 AAIC-AFRI conference on New Crops: Bioenergy, Biomaterials and Sustainability, Oct 12-16, Washington, D.C.

Zamora, R. and J. Sessions. RENO: A Computerized Solution Procedure and Decision Support System for Forest Biomass Recovery Operations. In Proceedings of the 2013 Annual Council on Forest Engineering Meeting, July 7-10, Missoula, MT.

Beck, S. and J. Sessions. Ant Colony Optimization for Road Modifications. In Proceedings of the 2012 Annual Council on Forest Engineering Meeting, September 9-12, New Bern, NC.

## **Research Presentations**

### *Oral, Posters, or Display Presentations*

#### Posters:

Zamora, R., J. Sessions, and D. Smith. 2013. Structured grinding tests: Increasing bulk density to decrease transportation costs. Prepared for 2013 Annual Meeting for the Northwest Advanced Renewables Alliance (NARA), Sept. 10-12, Corvallis, OR.

Zamora, R., and J. Sessions. 2013. RENO: Residue evaluation and network optimization software. Prepared for 2013 Annual Meeting for the Northwest Advanced Renewables Alliance (NARA), Sept. 10-12, Corvallis, OR.

Belart, F., J. Sessions, G. Murphy, M. Jolly and K. Tuers. 2013. Moisture management model for optimal forest biomass delivery in the Pacific Northwest. Prepared for 2013 Annual Meeting for the Northwest Advanced Renewables Alliance (NARA), Sept. 10-12, Corvallis, OR.

Zamora, R., K. Boston, and J. Sessions. 2012. Activity-Based Stochastic Simulation of Mobile Chipper Productivity. Prepared for 2012 Annual Meeting for the Northwest Advanced Renewables Alliance (NARA), Sept. 13-14, Missoula, MT. Also presented November 13, 2012 at Northwest Bioenergy Research Symposium, Seattle, WA.

Zamora, R. and J. Sessions. 2012. Economic Optimization of Forest Biomass Processing and Transport: A Decision Support System. Prepared for 2012 Annual Meeting for the Northwest Advanced Renewables Alliance (NARA), Sept. 13-14, Missoula, MT. Also presented November 13, 2012 at Northwest Bioenergy Research Symposium, Seattle, WA.

Zamora, R., B. Flint, J. Sessions, L. Kellogg, and P. Adams. 2012. Ground-Based Thinning on Steep Slopes in Oregon: Productivity, Economics and Soil Compaction Effects. Prepared for 2012 Annual Meeting for the Northwest Advanced Renewables Alliance (NARA), Sept. 13-14, Missoula, MT. Also presented November 13, 2012 at Northwest Bioenergy Research Symposium, Seattle, WA.

Zamora, R. and J. Sessions. 2012. Characteristics of NARA Forest Residue Sites. Prepared for 2012 Annual Meeting for the Northwest Advanced Renewables Alliance (NARA), Sept. 13-14, Missoula, MT. Also presented November 13, 2012 at Northwest Bioenergy Research Symposium, Seattle, WA.

Zhu, J. Y., C. Zhang, J. Sessions, and R. Gleisner. 2012. Fractionation of Douglas-fir Forest Residues for Efficient Sugar Production. Prepared for 2012 Annual Meeting for the Northwest Advanced Renewables Alliance (NARA), Sept. 13-14, Missoula, MT.

Buffum, M., G. Murphy, F. Belart, F. Becerra and B. Do. 2012. Assessing moisture content in biomass piles. NARA Summer Undergraduate Research Experience. Washington State University, Pullman WA. August 2.

Do, B., G. Murphy, F. Belart, F. Becerra and M. Buffum. 2012. Assessing risks of arson in biomass piles. NARA Summer Undergraduate Research Experience. Washington State University, Pullman WA. August 2.

#### Presentations:

Zhu, J. Y., C. Zhang, R. Gleisner and J. Sessions. 2013. Upgrading forest residues of Douglas-fir through physical fractionation for fermentable sugar production. Presented at 35<sup>th</sup> Symposium on Biotechnology for Fuels and Chemicals. April 29-May 2, 2013. Hilton Hotel, Portland, OR.

Sessions, J. 2013. Jet Fuel from Woody Biomass. Presentation at 68<sup>th</sup> Olympic Logging Conference, May 1-3, Fairmont Empress Hotel, Victoria, BC, Canada.

Sessions, J. 2013. Jet Fuel from Woody Biomass. Presentation at 76<sup>th</sup> Oregon Logging Conference, Feb 21-23, Lane County Convention Ctr, Eugene, OR.

Sessions, J. 2012. Perspectives and Priorities for Bioenergy Research at Oregon State University. Presentation at Northwest Bioenergy Research Symposium, Seattle, WA. November 14. Invited Opening Plenary Presentation.

Belart, F., J. Sessions, G. Murphy, M. Jolly, L. Madsen and L. Muszynski . 2013. Moisture management model for optimal forest biomass delivery in the Pacific Northwest. 2013 Western Forestry Graduate Research Symposium. OSU College of Forestry, Corvallis, April 23.

Zamora, R. and J. Sessions. 2013 RENO: Economic optimization of forest biomass and transport. 2013 Western Forestry Graduate Research Symposium. OSU College of Forestry, Corvallis, April 23.

Belart, F. and G. Murphy. 2012. Forecasting and monitoring moisture of woody biomass in Ireland and Oregon. Presentation at Council on Forest Engineering. New Bern, North Carolina. September 10-11.

Murphy, Glen. 2012. Forecasting and monitoring moisture of woody biomass in Ireland and Oregon. Precision Forestry Symposium, Mount Gambier, Australia, 28th March 2012.

Sessions, John. 2012. Project overview to Dan Biggs, Tillamook County Economic Development Council and Assistant OSU Provost, March 22.

Sessions, John. 2011. Invited overview of the NARA project to a group of forest industry leaders and the Presidents of Oregon State University and University of Oregon in Corvallis on September 29, 2011.

Sessions, John. 2011. Invited overview of the NARA project to Oregon delegation staffers at a meeting at the College of Forestry on December 5, 2011.

### **Dissertations**

Zamora, Rene. 2013. Economic Optimization of Forest Biomass Processing and Transport. PhD thesis. Completed May 23, 2013. John Sessions, Advisor.

Becerra, Fernando. 2012. Evaluation of Six Tools for Estimating Woody Biomass Moisture Content. MS thesis. Completed December 13, 2012. Glen Murphy, Advisor.

Kim, Dong-Wook. 2012. Modeling air-drying of Douglas-fir and hybrid poplar biomass in Oregon. MS thesis. Completed June 6, 2012. Glen Murphy, Advisor.