



Personal Information

Name: Rene Zamora Cristales
Place of birth: Guatemala City, Guatemala
Address: 1703 Franklin Street Fredericksburg, VA 22401
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Languages: Spanish, English, Portuguese

Education

PhD. Forest Engineering, Oregon State University 2013
Research: Economic optimization of forest biomass processing and transport for aviation biofuel

Master of Science in Forest Resources, Applied Economics and Wood Technology Austral University of Chile, Cum Laude 2006

BS Forest Engineering Cum Laude Del Valle University of Guatemala 2003

Scholarships distinctions and service

Courtesy Faculty member, Oregon State University 2014-Present

Deputy Coordinator IUFRO Road Networks and Transportation Division 3.01.01 2015-2019

Schulz family Graduate Fellowship 2012

Richard Strachan Forest Engineering Graduate Fellowship, College of Forestry, Oregon State University 2011

Scholarship Program OAS placed American States Organization LASPAU-Harvard for Postgraduate studies 2005-2006

Scholarship Agronomical Center of Tropical Research CATIE Best undergraduate Research 2002

Scholarship Exxon Standard Oil for undergraduate studies 1998-2003

Employment record

Latin America Research Coordinator, Global Restoration Initiative
Department of Food Forest and Water
World Resources Institute

2015-Actual

<p>Postdoctoral researcher, Economic Optimization Models <i>Department of Forest Engineering Resources and Management</i> <i>Oregon State University, Northwest Advanced Renewables Alliance (NARA)</i> http://www.nararenewables.org/</p>	2013-2015
<p>Graduate Researcher <i>Department of Forest Engineering Resources and Management</i> <i>Oregon State University</i> <i>Northwest Advanced Renewables Alliance (NARA)</i></p>	2011-2013
<p>FAO-National Forest Service INAB Improvement of Forest Supply Chain of Guatemala</p>	2010
<p>Forestry Division Manager Mozambique, Africa <i>Tectona Forest of Zambezia , Mozambique, Southern Africa</i></p>	2009-2010
<p>Forest-Economic Planning Manager <i>Interforest Limited</i> Guatemala Central America</p>	2007-2009
<p>Forestry Research Extension Small Forest enterprise development <i>VLIR (Vlamesse interuniversitaire raad) Belgium, Rafael Landivar University</i></p>	2006-2007
<p>FAO Consultant. Improvement of Forest Education in Verapaces Region Guatemala, Central America</p>	2007
<p>General Manager Wood preservation and Drying Department <i>Maderas y Machihembres S.A. Guatemala, Central America</i></p>	2002-2005
<p>Assistant Professor of Forest Products, and Economics (Forest Engineering program) <i>Del Valle University of Guatemala</i></p>	2007-2009
<p>Assistant Professor of Forest Financial Models (Forest Management program) <i>Rafael Landivar University, Guatemala</i></p>	2007-2008

Publications

Daugherty B., Session J., Zamora-Cristales R. Wing. M. 2018. **Improving Large Trailer Access for Biomass Recovery in Steep Terrain.** Journal of Forest Science. <https://doi.org/10.1093/forsci/fxx020>

Ding H., Faruqi S., Wu A., Anchondo A., Altamirano J., Verdone M., Zamora-Cristales R. Chazdon R., Vergara W., 2017. **Roots for Prosperity: the Economics and Finance of restoring degraded lands.** World Resources Institute, Washington DC., 8op. <https://www.wri.org/sites/default/files/roots-of-prosperity.pdf>

Zamora-Cristales R. 2016. **Resource Allocation model for public incentives for forest landscape restoration in Latin America.** Land Economics; In preparation

Zamora-Cristales R. 2016. **Economic optimization of restoring riparian forest.** Forest Policy and Economics; In preparation

Chen C., Pierobon F., Zamora-Cristales R., Ganguly I., Sessions J., and Eastin I. 2016. **Modeling the processing and transportation logistics of forest residues using Life Cycle Assessment (LCA).** Journal of Forestry, Accepted.

Zamora-Cristales R., J. Sessions, and G. Marrs. 2016. **Economic implications of processing and transporting wet versus dry forest residues for biofuel production.** Canadian Journal of Forest Research <http://www.nrcresearchpress.com/doi/pdf/10.1139/cjfr-2016-0221>

Marrs G., R. Zamora-Cristales, J. Sessions. 2016. **Forest Biomass Feedstock Cost Sensitivity to Grinding Parameters for Bio-jet Fuel Production** *Renewable Energy*. <http://dx.doi.org/10.1016/j.renene.2016.07.071>

Zamora-Cristales R., J. Sessions, 2015. **Modeling forest residue collection for bioenergy production.** *Croatian Journal of Forest Engineering*, http://www.crojfe.com/rji/crojfe_37-2_2016/Zamora.pdf

Zamora-Cristales R., J. Sessions. 2015. **Are double trailers cost effective for transporting forest biomass on steep terrain?** *California Agriculture* 69(3):177-183 DOI: 10.3733/ca.v069n03p177

Zamora-Cristales R., J. Sessions, D. Smith. 2015. **Effect of grinder configuration on forest biomass bulk density, particle size distribution and fuel consumption.** *Biomass and Bioenergy*, 81: 44-54 <http://dx.doi.org/10.1016/j.biombioe.2015.05.025>

Zamora-Cristales, R., J. Sessions, K. Boston and G. Murphy 2014. **Economic Optimization of Forest Biomass Processing and Transport in the Pacific Northwest.** *Forest Science*. <http://dx.doi.org/10.5849/forsci.13-158>

Zamora-Cristales R., J. Sessions, D. Smith, and G. Mars. 2014. **Effect of high speed blowing on bulk density of ground residues.** (Accepted) *Forest Products Journal*. <http://dx.doi.org/10.13073/FPJ-D-14-00005>

Zamora-Cristales, R., P. Adams, and J. Sessions. 2014. **Ground-based thinning on steep slopes in Western Oregon: Soil compaction and disturbance effects.** *Forest Science* 60(2):1-7 <http://dx.doi.org/10.5849/forsci.12-525>

Zamora-Cristales, R., K. Boston, J. Sessions, and G. Murphy. 2013. **Stochastic simulation and optimization of mobile chipping economics in processing and transport of forest biomass from residues.** *Silva Fennica* 47(5):1-21. <http://dx.doi.org/10.14214/sf.937>

Zamora-Cristales, R., J. Sessions, G. Murphy and K. Boston. 2013. **Economic impact of truck-machine interference in forest biomass recovery operations on steep terrain.** *Forest Products Journal* 63(56):162-173; <http://dx.doi.org/10.13073/FPJ-D-13-00031>

Sessions, J. and R. Zamora-Cristales. 2013. **Cost Effective Logistics For Forest Harvest Residuals: The Upstream Part of the Sugar Stream.** In Proceedings of the Seventh National New Crops Symposium "New Crops: Bioenergy, Biomaterials, and Sustainability" Association for the Advancement of Industrial Crops (AAIC), October 13-16, . Renaissance Hotel, DuPont Circle, Washington D.C.

Zamora-Cristales, Rene. 2013. **Economic Optimization of Forest Biomass Processing and Transport.** *PhD. Oregon State University, 196 pp.* <http://hdl.handle.net/1957/39180>

Sessions, J., K. Tuers, K. Boston, R. Zamora and R. Anderson. 2012. **Pricing Forest Biomass for Power Generation.** *Western J. of Applied Forestry 28(2):51-56;* <http://dx.doi.org/10.5849/wjaf.12-012>

Zamora R. 2008. **Forest certification Financial Analysis: Teak Plantations.** Cape Town Southafrica. *ASDI, Sweden.*

Aguilera A. Zamora R. **Surface roughness in sapwood and heartwood of Blackwood (*Acacia melanoxylon* R. Br.) machined in 90-o direction,** *European Journal of Wood and Wood Products* Springer Berlin / Heidelberg ISSN0018-3768 (Print) 1436-736X (Online) Volume 67, Number 3 / agosto de 2009. www.springerlink.com/content/61840h80480002to/

Aguilera A. Zamora R. 2007 **Wood Machining process monitoring of Blackwood (*Acacia Melanoxylon*) with acoustic emission technique and his relationship with resulting surface roughness** *SciELO, Revista Maderas Ciencia y Tecnología 9(3): 323-332.* www.scielo.cl/scielo.php?script=sci_isoref&pid=S0718-221X2007000300011&lng=es&tlng=en

Zamora R. 2006. **Effect of machining sapwood and heartwood of *Acacia melanoxylon* in sound and acoustic emission.** *Tesis de grado Master en ciencias mención recursos forestales Valdivia 104p.*

Zamora R. 2004. **Economic and Technical feasibility of construction low cost Dry wood Kilns for the development of a Dry lumber Market in small sawmills.** *Guatemala Forestal (1)1, Gremial forestal.*

Zamora R. 2004. **Effect of forest economic Incentives in rural communities of the central part of Guatemala.** *Ciencia Forestal 2(4) 15-18.*

Zamora R. Alvarado S. Castañeda C. 2003 **Economic and Technical Evaluation of Forest Incentives Program in Guatemala.** *Centro Agronómico de Investigación tropical CATIE – Instituto Nacional de Bosques INAB 120p.*

Project Management

Supporting Initiative 20x20. International Climate Initiative (IKI), BMUB, Germany. Writing the proposal and budgets, Managing Workplans and budgets as well as implementing activities in Mexico, Peru, Colombia, Costa Rica, Guatemala, Chile.

Monitoring Landscape Restoration, International Climate Initiative (IKI), BMUB, Germany. Writing the proposal and budgets, Managing Workplans and budgets as well as implementing activities in El Salvador, Nicaragua and Honduras.

Resource allocation for Public Incentives, International Climate Initiative (IKI), BMUB, Germany. Leading research efforts to allocate public resources for restoration.

Economic Supply Chain Analysis, United States Department of Agriculture, Lead the design of a landscape model to optimize the forest biomass supply chain.

Recent Presentations in Conferences and Conventions

International Union of Forest Resource Economist annual meeting "Optimizing public resources for landscape restoration at scale in Latin America" New Orleans, LA, USA, 2017.

*Congreso de la red chilena de restauración ecológica, **Iniciativa 20x20 for Restoration of Degraded lands in Latin America***, La Serena, Chile, 2016

*Congreso de la red colombiana de restauración ecológica **Economic modeling of Riparian Forest Restoration in Guatemala***, Medellin, Colombia, 2016

*The second Northwest Wood-Based Biofuels + Co-Products Conference, **Economics of wet vs fresh material for biofuel production***. Seattle, WA, USA, 2016

Wood to Biofuel Webinar Series, Northwest Advanced Renewables Alliance, "Decision support for forest harvest residue collection". October 15, 2015.

Western Forest Economics and International Union of Forest Resource Economist annual meeting "Resource allocation for public incentives in Latin America" Seattle, WA, USA, 2015.

Western Forest Economics and International Union of Forest Resource Economist annual meeting "Forward reaching optimization to increase the value of wood poles" Vancouver BC, Canada, May, 2015.

International Union of Forest Research Organizations IUFRO world congress 2014. "Economics of forest biomass processing and transport on steep terrain" Salt Lake City Utah, USA, October, 2014.

Council of Forest Engineering Annual Meeting 2014, "A simulation model for forest biomass collection", Moline, IL, USA

Washington Contract Loggers Association, Annual Meeting 2014. "Improving Efficiencies in Forest Biomass in Biomass Collection and Transportation" Spokane, Washington, USA, March 2014

15th Symposium in System Analysis in Forest Resources, "A Decision Support System for the Economic Optimization of Forest Biomass Processing and Transportation" Quebec City, Canada, August, 2013.

Council of Forest Engineering Annual Meeting 2013, "RENO: A Computerized Solution Procedure and Decision Support System for Forest Biomass Recovery Operations", Missoula, Montana USA

Western Forestry Graduate Symposium, "Economic optimization of mobile chippers for biomass processing", April 24, 2013 Corvallis, Oregon USA.

CAMCORE, Data management for Forest Genetic Trials, 26 July-2 August 2009, Sabie, South Africa.

Swedish International Development agency **Forest Certification Training Program** *First Part Sweden 14-30 May 2008. Second part 5-20 November South Africa 2008.*

National Forestry Congress Guatemala 2008 Keynote speaker: **"Optimal Cutting Age for Pine. Plantations in Guatemala: An Economic Analysis"**. *Guatemala 2008.*

Central America Forestry Congress. Oral presentation: **"Wood machining Process"** San Salvador El Salvador 2007

Recent Posters

Zamora-Cristales R., and J. Sessions. 2014. Improving Efficiencies in forest biomass transportation. 2014. Prepared for September 14, 2014 Annual Meeting Northwest Advanced Renewable Alliance.

Zamora-Cristales R., and J. Sessions. 2014. Modeling forest biomass collection. 2014. Prepared for April, 2014 Northwest Wood-based biofuels + co products conference, Seattle, OR.

Zamora-Cristales R., and J. Sessions. 2014. Forest harvest residue and bioenergy research program at Oregon State University. 2014. Prepared for January 6, 2014 Annual Meeting Western Regional Council on Forest Engineering, Eugene, OR.

Zamora-Cristales, R., P. Adams, and J. Sessions. 2014. Ground-Based Thinning on Steep Slopes in Western Oregon: Soil Exposure and Soil Strength Effects. Prepared for January 6, 2014 Annual Meeting Western Regional Council on Forest Engineering, Eugene, OR.

Zamora-Cristales, 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.

Zamora-Cristales, 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.

Zamora-Cristales, 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.

Zamora-Cristales, 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.

Zamora-Cristales, 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.

Zamora-Cristales, R., P. Adams, and J. Sessions. 2011. Soil impacts of mechanized harvesting on steep slopes. Poster prepared for national SAF meeting, Honolulu, HI, Nov 1-5, 2011.

Software Development

- RENO: Residue Evaluation and Network Optimization program: Optimizing the economics of forest biomass processing and transport
- POLEBUCK: Maximizing the value of a tree for wood poles and sawlog production.

Reviewer

- Forest Science, Society of American Foresters
- Canadian Journal of Forest Research
- Forest Policy and Economics
- Journal of Forestry, Society of American Foresters
- Silva Fennica, The Finnish Society of Forest Science and the Finish Forest Research Institute
- Forest Products Journal, Forest Products Society
- Biomass and Bioenergy Journal, Elsevier.
- International Journal of Forestry Research, Hindawi.
- California Agriculture Journal
- Forests
- Biofuels
- Energies
- World Resources Institute internal reports

Professional References

John Sessions PhD, Professor and International Consultant, College of Forestry, Oregon State University, Corvallis, **USA**, john.sessions@oregonstate.edu Tel. +1 541-737-2818

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