


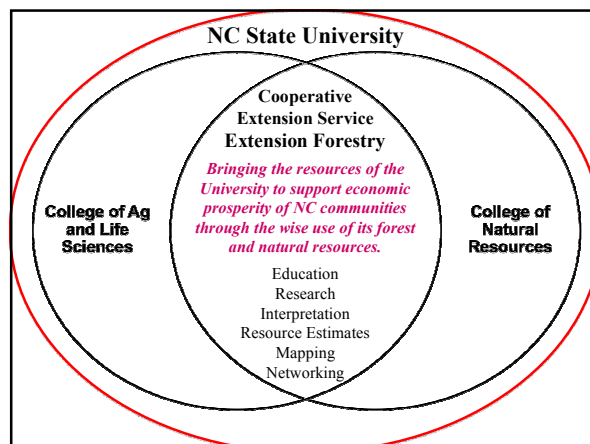
Latest Research and Policy Perspectives on Biomass



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So, From a Practical Perspective in Extension Forestry

- We try to extend what's known in science to stakeholders, and
- Where gaps exist on what is known and where we have skills, we work with others to fill the gaps in the knowledge base.

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Our Forest Resources Are Significant

- 31.2 million acres of land in state
- 58% in forest cover
- 78% of forestland owned by private individuals or families
- 450,000 – 600,000 landowners

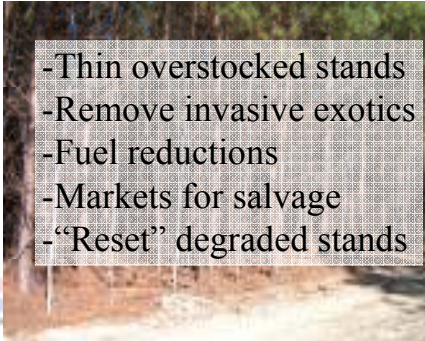
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Traditional Markets Are Declining

- U.S. pulp/paper industry has been declining since late 1990's
- Economic downturn has reduced demand for lumber, OSB, MDF, HDF, and other products

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Biomass Can Benefit Forest Health



- Thin overstocked stands
- Remove invasive exotics
- Fuel reductions
- Markets for salvage
- “Reset” degraded stands

Research Activities in the College of Natural Resources

- Biofuels production the big one including conversion technology and energy crop production
- Pellet production technology
- Torrefaction technology
- Policy
- Sustainability

Activities of the Extension Forestry Group

- Extension to landowners, foresters, loggers, and others

Extension Activities Examples



Activities of the Extension Forestry Group

- Extension to landowners, foresters, loggers, and others
- Web site

Activities of the Extension Forestry Group

- Extension to landowners, foresters, loggers, and others
- Web site
- Research and research collaboration

Characterization of Coarse Woody Debris



Torrefaction

Designed for 600 lbs/hour input, 200 lbs/hour output
Sized for Transport (21' length main box)
Heat Budget, <1% fossil fuel from pilot light



Database for Industry and Resource Sustainability

Technology	Author	Software	Output	Frequency
...
...
...
...
...

Ecosystem Sustainability



Recent Comments from Dr. Dan Richter, Duke University

"I recommend that an unsupported assertion be removed from the report. That is, 'biomass has potentially unfavorable environmental impacts that are greater than other renewable resources such as wind or solar' (p. 9). This bias paints biomass energy as a second-class renewable energy source and is not justified by peer-reviewed science.

Dr. Dan Richter (continued)

“Life-cycle analyses and the experience of many European nations and a growing number of North American communities (Campbell et al. 2009, Musil-Schliffer 2010), indicate this bias to be superficial and short-sighted. Renewables such as wind, solar, biomass, and geothermal each have strengths and weaknesses, and need to be promoted as pieces to a larger puzzle.

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Dr. Dan Richter (continued)

“If properly sited, and scaled to sustainably managed woodsheds, biomass-energy facilities offer a host of very positive and recurring economic, social, and environmental benefits (Richter et al. 2009a, 2009b). In backing away from fossil fuels, we will need all the renewable and sustainable energy sources we can sustainably muster. Properly developed, the diversity of renewable sources of energy can be managed to be mutually supportive.”

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References for Richter

- Campbell, J.E. et al. 2009. Greater transportation energy and GHG offsets from bioelectricity than ethanol. *Science* DOI. 10.1126/science.1168885
- Musil-Schliffer, B. 2010. European wood-heating technology survey. Report 10-01, SERDA, Albany, NY.
- Richter, D.deB. et al. 2009a. Wood energy in America. *Science* 323:1432-1433.
- Richter, D.deB. et al. 2009b. Rekindling wood energy in America. *Renewable Energy World* at: <<http://www.renewableenergyworld.com/rea/news/article/2009/06/rekindling-wood-energy-in-america>>

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For more information

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- For woody biomass see:
– <http://www.ces.ncsu.edu/forestry/biomass.html>

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QUESTIONS?

