Spring 2011

NATIONAL WOODLANDS

THE VOICE OF FAMILY FOREST LANDOWNERS

Growing half of America's wood, forests, water and wildlife

- Bioenergy in the Southern Forest
- Traditional Forestry Fees Examined
- Oaks in the Spring

FAMILY FOREST LANDOWNER
NATIONAL WOODLAND OWNERS Association
NWOA

ALLIANCE of LANDOWNER ASSOCIATIONS
NWOA

WWW.WOODLANDOWNERS.ORG

NATIONAL WOODLANDS

THE MAGAZINE OF THE *NATIONAL WOODLAND OWNERS ASSOCIATION*

Volume 34, Number 2 ***Spring 2011***

www.woodlandowners.org

Contents

Where's the Wood? Bioenergy and the Southern Forest..8
Zoë Hoyle

Consulting Forestry Fees: What's the Best Approach? ..12
Mike Greason

Oaks in the Spring: Opportunity & Risk.....18
Charles E. McGee

The Role of Trusts in Estate Management 20
William C. Siegel

Non-Industrial Forestry Commentary.....5
Forestry Quotes of the Quarter.....6
Conservation News Digest.....6
Woodland Owners in Action.....7
Woodland Report..... 14-15
National Historic Lookout Register 16
The Greatest Good 17
News From the Regions.....23
National Directory of Consulting Foresters 27

On the Cover: *As America increasingly plugs into wood-based energy, forest management needs to reflect the requirements and challenges of meeting this new market. For a discussion of how this is being done in the South, see page 8.*

Publisher
Keith A. Argow, Ph.D.

Executive Director
Darrel Pendris

Forest Tax Counsel
William C. Siegel

Editor
Eric A. Johnson

Contributing Writers
Frank Stewart

NATIONAL WOODLANDS is published by the National Woodland Owners Association to promote the wise use of America's forest resources. Subscribers include landowners, professionals in the natural resources disciplines, companies and individuals associated with the forest products industry, libraries, government agencies, and other people who have an interest in forestry.

NATIONAL WOODLANDS (ISSN 0279-9812), Spring 2011, Volume 34, No. 2. Published quarterly, in Winter, Spring, Summer and Autmn by the National Woodland Owners Association, 374 Maple Ave. E., Suite 310, Vienna, VA 22180-4751; tel. (703) 255-2700. U.S. subscriptions: $35.00 for one year or $60.00 for two years, through membership in the National Woodland Owners Association; sustaining member rates are $45.00 per year, $80.00 for two years. For delivery to Canada, Europe, and most International addresses, add an additional $10 for postage. Back issues, if available, are $3.00 each, postage paid. Editorial offices: 41 Fountain St., Clinton, NY 13323. Periodicals postage paid at Vienna, Virginia, and additional mailing offices.

POSTMASTER: Please send changes of address to National Woodlands, 374 Maple Ave. East, Suite 310, Vienna, Virginia 22180-4751.

Where's the Wood? Bioenergy and Southern Wood Supplies

by **Zoë Hoyle***

Just a century and a half ago, Americans relied on wood for structural materials and energy so heavily that they almost stripped the country of its forests, leaving a devastation of soil and water. This near disaster prompted the formation of the Forest Service and began a century of research that has resulted in the restoration of the nation's forest ecosystems and the innumerable benefits they provide.

The 1800s also brought the shift to fossil fuels that led us to another era of crisis. As concerns grow about the effects of global climate change and American dependence on foreign oil, so has interest in using woody biomass to produce transportation fuels or electricity. If it pans out, using wood for energy could usher in the most important new phase for forestry in a century.

The long-term research studies from the Southern Research Station (SRS) that established the best practices for planting and managing forests in the South also underlie the best management practices needed to harvest and grow wood for energy. SRS forest operations research is already showing landowners how to economically and sustainably harvest small-diameter wood for energy feedstocks, while agroforestry scientists design systems that protect water resources while providing the capacity to grow bioenergy crops as

Woody biomass serves as an alternative fuel for producing electricity. *(Photo by Warren Gretz, National Renewable Energy Laboratory).*

**Science Writer/Editor,* Compass *magazine. These articles were published in issue 17 of* Compass, *December 2010. Compass is published by the Southern Research Station. Headquartered in Asheville, NC, the Southern Research Station is comprised of more than 400 scientists and support staff who conduct natural resource research in 20 locations across 13 southern states. Learn more about the Southern Research Station at: http://www.srs.fs.usda.gov/.*

part of a portfolio of forest products.

Markets and incentives will determine how growing wood for energy affects the landscapes and people of the South. SRS economic research, combined with forest and inventory analysis data, provides the input needed by planners at multiple levels to balance the needs of a burgeoning wood-to-energy market with those of more traditional forest industries, and with the full range of benefits—ecological, practical, aesthetic, and spiritual—provided by southern forests.

A New Boom or a Bust?

The South, with its productive climate and forest industry, is uniquely poised to benefit from a new market for wood. Often called the "nation's wood basket," the South produces an estimated 60 percent of the nation's timber supply. Of the 214 million acres of forest land in the southern region, 89 percent are owned by private landowners. About 19 percent of these forests are planted, some intensely managed; a long history of forest industry has provided the South with a good infrastructure for moving and processing wood for energy.

Through the 20th century, total acres of timberland in the South remained stable except for a five percent reduction in the 1970s due to agricultural expansion. Meanwhile, acres of planted pine forests increased since the 1960s to some 39 million acres, more than any other country in the world. These forests can produce up to three times as much fiber as naturally regenerated forests and seem a natural fit for energy—or more likely, mixed use—production.

This all sounds rosy, but as with any human endeavor, there are always unintended consequences.

Concerns about the new wood boom include environmental impacts and siting issues, but some of the most pressing—and closely related—are about supply. Just exactly where will all the wood for energy come from if aggressive renewable energy policies are adopted? Will we end up with more pine plantations in the South? Will natural forests be cut for energy? Will timber prices rise so high that other forest industries are driven out of business?

Early studies assumed that the fiber for bioenergy would come almost exclusively from residues—wood debris from timber or mill processes. The South is rich in logging residues, with about half of the total national supply. But as more and more biomass-based facilities enter the planning phase, it's become apparent that residues will probably not be enough--that some energy feedstocks will have to come from plantations and even from natural forests. These same resources support southern pulp, paper, and sawtimber markets, which could be adversely affected by demand for bioenergy.

It all comes down to markets, how demand will affect future supply and ultimately, the sustainability of southern forest resources.

How Can We Tell If There's Enough?

SRS tracks forest industry trends through its Forest Inventory and Analysis (FIA) unit in Knoxville, Tennessee, and its Forest Economics Research unit in Research Triangle Park, North Caroline. FIA timber output and harvest and utilization studies pinpoint exactly what's happening in the South's forest industries, including closure of the pulp and paper mills that bioenergy industries will compete with.

Led by research forest economist David Wear, scientists in the SRS economics unit work with a range of university and other cooperators to look into the future of the forest industry in

Wood to Energy Points to Ponder

- Demand for the South's timber has declined from a peak in the late 1990s to levels comparable to the early 1990s, with pulpwood production falling by 15 percent between 1997 and 2006. At the same time, investment in timber growing continued until 2000, expanding the timber supply. New demand for wood for bioenergy could provide a "replacement" for reduced demands from the pulp and paper industry, but would also drive up prices for the softwoods used in the pulp and paper industries.

- Commercial forest landowners in the South have shown themselves to be very responsive to expanded demands for timber by harvesting more in the short run and by increasing investment in production in the long run. Timing—when growers start investing in response to demand for bioenergy—will affect how long prices for bioenergy feedstocks continue to rise.

- Land use and forest ownership changes raise uncertainty about wood supplies for bioenergy, especially where these supplies will be grown. Transporting feedstocks more than 45 miles adds prohibitive transportation costs.

- Key drivers for bioenergy development in the South will be the adoption of policies to encourage the use of renewable sources for energy, and the development of the technologies needed to make the commercial-level production of cellulose-based liquid biofuels truly feasible. Renewable energy policies such as state-level renewable portfolio standards will probably have the greatest effect on the wood for bioenergy market in the short to medium run.

- The growing use of wood for bioenergy will compete with the existing wood products industry; how much depends on the policies adopted for renewable energy. At the same time new demands for wood should encourage forest landowners to invest in expanding supplies, a long-term response.

- In addition to "clean" feedstocks, liquid biofuels require large supplies of water, which may prove a limiting factor in developing commercial-scale biofuels plants in the same way that water organized and limited the siting of pulp and paper plants in the South. This may also become another area of competition with existing wood products industries.

- Forests provide a wide range of services beyond the production of fiber. A shift towards more intensive management for bioenergy feedstocks could affect water quality, wildlife habitat, and other services. A specific area of concern, for example, is the southeastern Coastal Plain, where wetland forests are already stressed and several amphibian species already imperiled.

the South. It's no easy task; in many cases, they're creating the tools they need from scratch and making the first forecasts and analyses for an economy where markets can turn on a dime, often driven by perception rather than actual data.

Wear and his fellow researchers provide ways to outline tradeoffs and effects as the market for biomass moves in different directions, using forecasting methods that can be checked and modified over time. With John Greis, a resource specialist with the Forest Service regional office, Wear currently leads a collaborative analysis of the response of southern forests to future scenarios that include climate change, population growth, and the development of markets for bioenergy feedstocks. A major goal of the Southern Forest Futures Project, due out in 2011, is to develop scenarios planners can use to evaluate their decisions in response to a range of new situations, whether they're threats or opportunities.

In the case of bioenergy, this growing market for southern wood is bound to have mixed—and for a few decades, at least—uncertain results.

"Demand for southern timber has declined, and pulpwood production fell off between 1997 and 2006. At the same time timber supply kept expanding, so prices declined," says Wear. "Projections show supply continuing to expand in much of the South over the next two decades. Feedstocks for bioenergy could provide a replacement for reduced demand from the paper and pulpwood industries, but the bioenergy industry will directly compete with the other industries, raising raw material prices."

As part of the futures project, Wear and unit scientists have also developed a framework based on detailed FIA data for analyzing the harvest choices of private landowners, who own some 68 percent of the South's forest lands—and who provided 97 percent of the region's timber harvest in 2006. The framework will allow researchers to not only estimate timber supply but also project how land use and forest conditions will affect biomass supplies in the future.

Supply, Demand, and Policy

SRS research economist Karen Abt has a long history of studying the behavior of private landowners in southern timber markets and how the individual decisions landowners make aggregate to the regional level. For a recent study, she and husband and co-researcher Robert Abt, North Carolina State University professor, used a model of aggregate timber supply and demand, the Subregional Timber Supply model, to set up scenarios to evaluate the effects of demand for woody biomass for energy on both timber markets and the sustainability of forest resources in the South.

The Abts included standing timber inventories in their scenarios, acknowledging the probability that residues will

Bioenergy and Climate Change
Wood vs. Fossil Fuels

Fossil fuels—coal, oil, and natural gas—come from ancient deposits that formed millions of years ago beneath the Earth's surface. These deposits are not being replenished. When these nonrenewable fuels are burned, greenhouse gases—including carbon dioxide (CO_2)—are released into the Earth's atmosphere, where they trap heat and contribute to global climate change.

Burning wood also releases CO_2 and greenhouse gases to the atmosphere, but living trees are constantly removing carbon from the atmosphere and storing it in their stems and roots. As long as we're planting and growing as many or more trees than we're burning, using woody biomass for energy can be considered carbon neutral.

In reality, there are still be CO_2 emissions from the machines used to harvest, process, and transport biomass feedstock, but these can be kept relatively low. The SRS Forest Operations Research unit conducts research that helps landowners cut both the emissions and costs of biomass harvest and removal by evaluating machines and processes for efficiency and sustainability.

Another advantage of using biomass as fuel is the reduction in air pollution from sulfur and nitrous oxides that result from burning fossil fuels. Wood has less than 50 percent the nitrogen content of coal, and the sulfur content is negligible.

Using thinnings from forests for bioenergy could help reduce the "megafires" of the last few years, which release massive amounts of CO_2, into the atmosphere, affect air quality globally and contributing to climate change. Using forest residues and thinnings for fuel also prevents that wood from being burned in open air with no pollution controls.

Using urban wood waste that usually ends up in landfills also reduces the amount of methane released into the atmosphere.

Growing trees for bioenergy feedstock provides additional incentive for landowners to keep their land in forests. Deforestation from land conversion contributes to global climate change by reducing the number of trees available to absorb and store CO_2.

not adequately supply growing bioenergy markets.

"Most studies on the sustainability of using wood for energy have focused on using residues from logging and manufacturing," says SRS researcher Karen Abt. "If woody biomass supply is limited to residues—thus to the production level of current industry—the impact on the forest resource will be small. If standing inventory is included, the energy potential from wood increases, but so do the effects on existing industry and on forest resources."

The wider adoption in the South of renewable energy portfolio standards (RPS) and state regulations that establish how much energy must come from alternative sources by a certain year will also affect demand on woody biomass for energy.

Another factor is the adoption of a national RPS, which would set a nationwide standard, e.g., 15 percent by 2021, for the amount of U.S. electricity coming from alternative sources. A strong federal-level RPS would cause a dramatic increase in the use of wood for energy across the United States; eventually an annual gap in supply would develop that would exceed the current demand for pulpwood in the South, opening up competition with all types of wood markets.

In their scenarios, the Abts looked at the use of woody biomass for renewable energy under high- and low-initial contribution levels for RPS. Factors that could affect wood demand include beginning and target years, definitions of eligible woody biomass, and incentives. The researchers varied the demand for woody biomass and the use of residues for electricity production to look at impacts over time on the pine pulpwood and sawtimber markets and on the underlying forest resource.

"In all of our scenarios, energy markets compete with existing industry an increase income for forest landowners," says Karen Abt.

None of these projections are written in stone. What SRS research economists have to offer is a perspective that comes from outside the markets themselves; if there's a vested interest it's in sustaining southern forest resources for the full range of services they provide.

"We can't really give you definitive answers," says Karen Abt. "Our job is to outline tradeoffs as policy and the markets interact. We understand that this job never ends. As the market changes, so do supplies, and new tradeoffs develop. But we'll be there to try to gauge what's happening and offer our perspectives."

Adding Bioenergy To the Agroforestry Mix

*by Sarah Farmer**

The USDA National Agroforestry Center (NAC), a partnership between SRS, Forest Service State and Private Forestry, and the USDA Natural Resources Conservation Service, studies how "Working Trees" (also called agroforestry), can be put to work on farms, ranches and in communities doing important tasks such as improving water quality, controlling soil erosion, increasing sustainable agricultural production, providing wildlife habitat and sequestering carbon. Scientists at the NAC investigate the economic and ecological payoffs associated with agroforestry practices and offer tools and training to natural resource professionals so that they in turn can help landowners get the most out of their land. Michele Schoeneberger, NAC research project leader, also examines how these same practices, be they windbreaks, riparian forest buffers, or alley cropping systems, can contribute to bioenergy production while providing multiple other services.

Bioenergy is in the spotlight these days, with much interest in identifying alternative biofuel feedstock sources. Fast-growing, energy-rich perennial grasses such as switchgrass—grown as part of an agroforestry system—show particular promise as feedstocks for the next generation of biofuels. Efficient production of transportation fuel from wood is still a ways off, but short rotation woody crops have been grown in dedicated plantations and used for electric power generation for over a decade, especially in states with renewable portfolio standards in place. Wood can also be co-fired in existing coal-powered plants or serve as the primary fuel in the smaller combined heat and power (CHP) and advanced wood combustion (AWC) plants that are popular in Europe and gaining increasing interest in the United States as providing a more local solution.

Working Trees is all about local solutions.

"With Working Trees practices, you have a system that can do 'double duty,' providing the added conservation services, especially for water quality protection, needed to make monoculture biomass (both grain and cellulose-based) production more sustainable," says Schoeneberger. "That crop (trees) can also serve as an additional source of biomass for energy use, be it in CHP systems for on-farm, schools or other local use, co-firing, or production of transportation fuels."

"Shifts in farm policy, programs and markets will be necessary to the make adoption of agroforestry practices for bioenergy production more attractive to landowners," says Schoeneberger. One such program, USDA's Biomass Crop Assistance Program (BCAP), provides funding for landowners who sell eligible biomass to approved conversion facilities that generate heat, power or biofuels. Through BCAP, eligible producers of qualified renewable crops can receive up to 75 percent of start-up costs, plus annual payments. Armed with knowledge from agroforestry research, land managers can choose species and practice designs based on their ability to improve water quality, enhance biodiversity or other purposes. Including biofuel production in the mix will require investigating the bioenergy properties, biomass yield, plant resilience, and potential for invasiveness of biofuel crops. The need for renewable fuel sources is real and here to stay, and woody biomass as part of a larger portfolio of renewable resources offers landowners another way to make money while improving the value of their land. Generating bioenergy from local wood sources can also stimulate local economies, especially when materials are transported less than 50 miles.

Agroforestry practices offer an array of economic, ecological and esthetic rewards. Each day, Working Trees show us what they can do--reclaiming soil and water, producing an alternative energy source, providing landowners an additional income source, and improving our quality of life by connecting the landscape with green infrastructure.

**Sarah Farmer is a student-intern working as an Information Assistant with the Southern Research Station.*