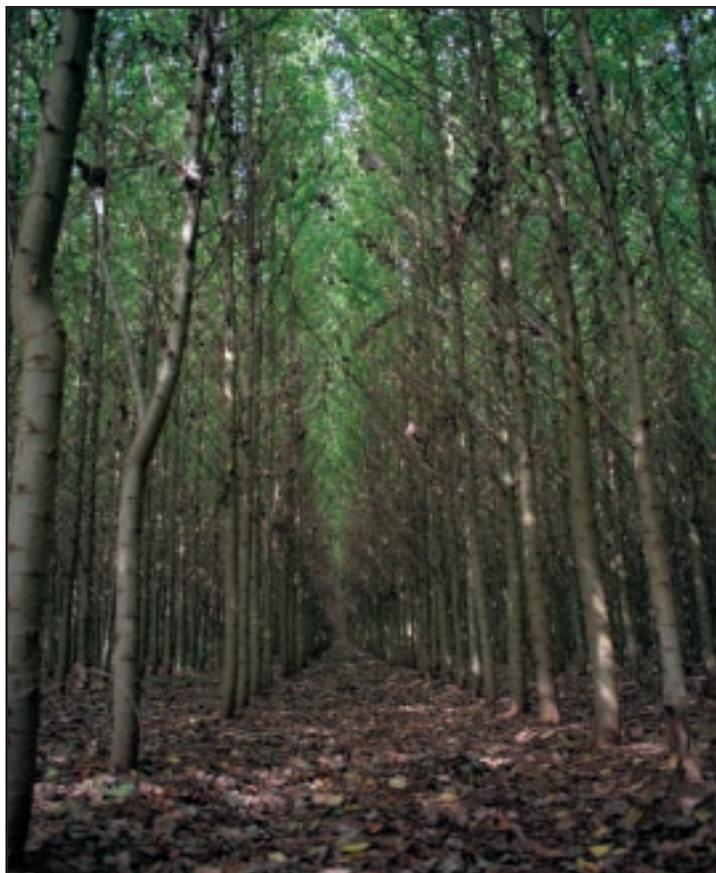


Developing Bioenergy Fuels

Overview

The U.S. Department of Energy (DOE) set out to develop and demonstrate environmentally benign crops and growing methods for making low-cost, high-quality biomass fuels. DOE established the Bioenergy Feedstock Development Program to achieve this goal. The effort is closely coordinated with DOE's complementary activities to develop technologies for efficiently converting biomass materials such as trees, grasses, and crops to energy.

Oak Ridge National Laboratory (ORNL) has led and coordinated the technical aspects of bioenergy fuels development since DOE started energy crop research in 1978. ORNL screened more than 125 trees and plants, the most promising of which are being developed as energy crops. Other organizations involved in this long-term research include more than 30 universities, 5 U.S. Department of Agriculture research units, and many private industries and businesses. Private firms frequently provide significant financial support for the research efforts.



DOE's bioenergy fuels researchers grow and study short-rotation woody crops such as these poplar trees.



Farmers and conservationists commonly grow switchgrass for forage and as a cover crop on reserve lands. Switchgrass also makes good biofuel because it grows as much as 8 feet per year.

Bioenergy fuels scientists lead the nation in advancing biotechnology research on hardwood trees. Some of their cutting edge research includes growing new trees from tree tissue instead of seeds or twigs and small branches. The scientists also use genetic research to enhance the tree and crop properties needed for high-quality biofuels. Other professions support the crop development efforts. Resource assessments, economic analysis, environmental research, and environmental analysis provide essential information needed to demonstrate and commercialize biomass energy.

Where Are We Going?

DOE's Biopower Program sets many goals for its various research, development, and demonstration activities. Three goals dominate the area of biomass fuels research:

- Enable dedicated trees and crops to be used instead of wood wastes to produce energy.
- Demonstrate the benefits and competitiveness of coordinated energy crop systems.
- Advance the expansion of agriculture and its related infrastructure of large-scale energy crop use to deploy 5.5 million acres of energy crops by 2020.

How Will We Get There?

Successful development of biomass crops requires unique cooperation between researchers and members of the energy, agriculture, forestry, and environmental communities. DOE's Bioenergy Feedstock Development Program provides a mechanism to integrate the efforts of this diverse group. Technology leaders recognize that stakeholders and participants may have different goals, so they promote multiple goals in energy, agriculture, forestry, and the environment.

Biomass fuel tasks such as the following support biomass power development objectives:

- Wood energy species modeling
- Herbaceous energy species modeling
- Environmental research
- Systems integration and analysis
- Energy crop market development
- Information and data service

The biomass fuels effort maintains a balance between several activities:

- Outreach
- Demonstration efforts
- Deployment efforts
- Development of new crops
- Development of new methods

Biomass fuels researchers provide long-term crop development, economic evaluation, and environmental research



Oak Ridge National Laboratory / PIX05167

Conventional agricultural equipment can be used to harvest switchgrass. There's no need to invest in new technology to harvest and bale this energy crop.

to collaborators. All three are needed to reduce the risk to companies willing to adopt biomass energy technologies. The federal government must continue to share risks (costs of growing, harvesting, storing, and supplying energy crops) for early adopters of energy crop technology and biomass energy producers.

The Bioenergy Information Network

The Bioenergy Information Network is accessible at <http://bioenergy.ornl.gov>. It contains a diverse array of downloadable project summaries, fact sheets, and technical reports on energy crops. It is an integral part of DOE's outreach activities. The Network provides Internet access to reports and data created by DOE and its support contractors, ORNL, and the National Renewable Energy Laboratory. The Bioenergy Information Network displays material about the potential and implications of fast-growing trees and grasses that can be converted to solid, liquid, and gaseous fuels; electricity; and chemicals. A searchable bibliography, conference announcements, and contact information are also available.

For More Information

Visit the Biopower Web Site:

<http://www.eren.doe.gov/biopower>

For copies of print documents on renewable energy, call DOE's Energy Efficiency and Renewable Energy Clearinghouse (EREC) 1-800-DOE-EREC (1-800-363-3732)



Oak Ridge National Laboratory / PIX05168

These poplar trees, which are less than two years old, can be grown intensively like an agricultural crop.

