

Income from Energy Crops

To expand power production from biomass substantially beyond current levels will require the cultivation of dedicated energy crops. New York has become the focus for a new initiative to develop agricultural feedstocks for energy production. This should help to stabilize the revenue stream for participating farmers: 26 area farmers have expressed a desire to diversify their crop production to include energy feedstocks.



Warren Greitz, NREL/PIX00308

Most agricultural wastes can be used to generate electricity, including the mountains of fibrous material left over from processing sugarcane crops such as this one in Hawaii. Selling power to electric utilities helps to improve the economics of sugar production for local companies.

The Niagara Mohawk Power Corporation and the State University of New York (SUNY) are members of a consortium that is developing willow energy crops on 1000 acres of farmland around Tully, New York. This is the first stage of a plan to convert over 40,000 acres in central and western New York to growing willow trees for energy by 2010. Once it is fully implemented, the plan is expected to create 300 rural jobs and generate energy crop fuel sales of almost \$20 million annually.

Each New Yorker sends an average of \$1000 each year out of state to purchase energy. In 1992, only one half of New York's farmers were able to earn a profit on farm operations. A "homegrown" willow crop bought by power companies will help keep energy dollars in the state and generate new income streams for farmers.

According to Dan Robison, a researcher at SUNY's Syracuse College of Forestry, "There are a lot of farmers in New York who are struggling to stay in business. There are a lot of farmers throughout the region who are essentially working for free, on a break-even basis, and any new opportunities — they're interested."

Hybrid willow species are being developed by the project partners to be fast-growing and resistant to drought and disease. Male willow trees can thrive in soils and climates less suitable for other crops. These trees require minimal application of fertilizer and insecticides and will assist in the control of soil erosion. Because willow is planted once, then repeatedly harvested from the same plant for up to 20 years, soil erosion is minimized compared to traditional row crops.

"This is ... a very good alternative farm crop ... a cash crop," said Larry Abrahamson, another of SUNY's researchers.

Bad Weather? Good News ...

The agricultural community of Granite Falls, Minnesota, will soon become the home for a new 75-MW biomass gasification power plant that will be built just outside of town. The plant will employ 100 full-time staff and will create an additional 60-80 part-time jobs for people handling the biomass feedstock.

"It's going to generate jobs in the community — the plant itself — but the other part of it is that it's economic development with the farmers."

— Farmer Dick Jepson, in an interview for the 1996 DOE video, *Growing America's Energy: The Story of Biomass Power*

A small group of area farmers and business people are developing alfalfa as an energy crop for the power plant. Alfalfa is normally grown primarily for use as cattle feed. When bad weather destroys the crop, it can no longer be fed to cattle, but the damaged stems can still be used as a feedstock for electricity production.

"We'll have a ready market for the stems," said John Moon, a local farmer. "A brown stem has just as much quality for gasification as a nice stem that hasn't been rained on."

In good years, the alfalfa crop will be separated into stems and leaves. The leaves will be sold as cattle feed, and the stems will be sold to the biomass plant. So in addition to producing clean energy for Minnesotans, the plant provides a second source of income for area farmers.

Because biomass plants can use a wide range of organic material, the technology is suitable for generating power in virtually any agricultural region — as far east as Maine, or as far west as Hawaii.