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Shrub may keep the lights burning

Crop can be used along with coal in New York power plants

By Mary Esch
 The Associated Press

CANASTOTA, N.Y. - Don New was phasing out his dairy operation and looking to grow something besides corn and soybeans when he first got wind of willow.

Not the weeping tree, but a fast-growing shrub touted as a source of clean, renewable energy with the potential to reduce harmful power plant emissions and support the local farm economy.

"The Cooperative Extension called it a crop of the future," Mr. New said. "Farmers always like to experiment. And I like the idea of growing your own energy instead of importing it."

Mr. New is in a pilot project to commercialize the production of willow as a source of biomass energy. The project is led by researchers at the State University of New York College of Environmental Science and Forestry at Syracuse.

The researchers began selecting varieties and growing test plots in 1986. This fall, the first large-scale burning of willow chips mixed with coal is planned at a power plant in western New York.

Studies commissioned by Oak Ridge National Laboratory and the National Renewable Energy Laboratory show that 3.4 percent to 10.7 percent of New York's coal fuel could be replaced with wood biomass fuels such as willow. That would significantly reduce the amount of sulfur dioxide, nitrogen oxide, and carbon dioxide produced by the power plants.

Willow is an ideal energy crop, said Tim Volk, director of the college's Willow Biomass Program. It's easy to plant: Just push cuttings of stem into tilled soil. It grows very quickly: Four years after



Larry Abrahamson, left, senior researcher of the willow project, and Tim Volk, director of the State University of New York College of Environmental Science and Forestry, check the growth of willow shrubs on a farm in Canastota, N.Y.

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planting, multi-stemmed shrubs 20 to 30 feet tall are ready to harvest.

It sprouts vigorously after cutting, so it can be harvested every three or four years without replanting. "You plant it once and harvest it six or seven times," Mr. Volk said.

Willow harvesting equipment has been developed in Europe, where the shrub has been grown as biomass fuel for 15 years. A machine similar to a corn combine saws off the stems near the ground, feeds them through a chipper, and blows the chips into a wagon. Cutting is done in winter, when the leaves are off.

At first, the New York researchers used a dozen willow varieties grown for biomass in Sweden, but they were decimated by pests.

So the researchers collected willow in the wild throughout the Northeast. Using local varieties, as well as willow from Korea, China, and Japan, they're crossbreeding and growing test plots to select plants that are hardy, fast-growing, and resistant to insects and disease.

The best plants are cloned; that is, cut into sticks from which more genetically identical plants are grown, rather than reproduced from seeds, which allow genetic variation.

Plants can also be bred for particular chemical characteristics. That's of interest to scientists who are developing refinery processes to extract compounds from wood for use in making synthetic gas, biodegradable plastics, adhesives, and other products, said Larry Abrahamson, a senior scientist on the project.

Mr. New has a dense plantation of shrubs ready for harvest.

"Now we're at the point where, what are the landowners going to do with this material? Where are the markets?" said Mr. Volk. "That's the biggest challenge."

When Mr. Volk started contracting with farmers to plant willow five years ago, two major utilities, Niagara Mohawk and New York State Electric and Gas, planned to burn it along with coal in their electrical power plants.

But during deregulation a few years ago, the utilities had to sell the power generation side of their business. New plant owners have been slow to embrace the idea of adding chipped willow to their coal burners, Mr. Volk said.

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