



Northern New York Agricultural Development Program News

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Note: Dr. Jerry Cherney will present his latest Northern New York grass energy research update at the June 4-6 North Country Clean Energy Conference in Lake Placid.

Link: <http://www.nnyagdev.org/index.php/2014/05/22/renewable-energy-grass-research-in-ny/>

Research Evaluates Grass Feedstock for Renewable Energy in NNY

Northern New York, May 22, 2014 – Cornell University Crop and Soil Sciences Professor Jerry Cherney is investigating the potential for Northern NY-grown grass energy crops to support a closed-loop, regional renewable energy system in which a grass-based heating product can be grown, processed into briquettes or pellets, and marketed locally.

Cherney is evaluating grasses that can be grown on land that is not otherwise productive. He has evaluated mulch-type hay samples produced by more than 40 farmers in Northern New York. The Northern New York Agricultural Development Program has posted the latest results of Cherney's Northern New York grass energy biomass trials at www.nnyagdev.org.

"Our goal is to identify whether mulch-type hay is appropriate for all scales of biomass combustion or if it would be better used for light industrial and industrial heating applications," Cherney says.

Cherney will present his most recent research findings at the North Country Clean Energy Conference in Lake Placid June 4-6.

The bioenergy feedstock trials, funded by the Northern New York Agricultural Development Program, are focused on three species with high yield potential under NNY growing conditions: switchgrass, currently the top warm-season grass of choice for biomass production in much of the U.S.; reed canarygrass; and tall fescue, which is also finding favor in dairy cow rations (based on some of Cherney's other research work).

Cherney is also developing best production practices for growing grass crops for bioenergy use. One focus area is how soil minerals may contaminate the surface of the grass grown for bioenergy use, significantly affecting the combustion efficiency, amount of heat produced per pound of pellets, and emissions.

Soil contamination of grass in the field is influenced by soil type, soil moisture, crop stubble height, the number of equipment passes over the field, rainfall between mowing and baling, and the type and calibration of harvesting equipment.

Dairyland Labs tested the NNY grass samples for 20 different elements. Cornell University tested the samples for gross energy content, measured as British Thermal Units or BTUs – the amount of heat energy required to raise the temperature of one pound of water by one degree Fahrenheit.

The gross energy content and total ash content of harvested grass affect combustion efficiency and the total amount of heat generated. Ash content testing would be less expensive than BTU analysis.

“Based on preliminary research results, it may be possible to accurately estimate the energy content of bales just by using ash content analysis to predict BTU, but we need to replicate this research over a number of years to determine the consistency that would allow us to make science-based recommendations,” Cherney says.

This NNYADP grant project has grass trials at the Cornell Willsboro Research Farm in Willsboro, NY, and at the W.H. Miner Agricultural Research Institute in Chazy, NY. The trial at the Miner Institute includes a switchgrass variety developed by Resource Efficient Agricultural Production (REAP)-Canada. REAP estimates that two acres of grass can meet the space and water heating need of an average residence and save from \$700 to \$1,000 per year in heating costs over liquid fossil fuels.

The Biomass Energy Resource Center in Vermont estimates that converting a residential gas or oil fossil fuel heating system to biomass would reduce net carbon dioxide emissions by 75-90 percent.

Cherney keeps a watchful eye on grass production and processing projects in Canada and nearly two dozen grass combustion projects in New York, Pennsylvania, Vermont, and New Jersey. Laboratories at Cornell University and SUNY Canton have conducted emissions testing on new high efficiency bioenergy heating appliances with funding from the New York State Energy Research and Development Authority.

The results of the biomass grass trials and a separate trial by Cherney evaluating tall fescue varieties grown in Northern New York in 2013 are posted under the Bio-Energy heading on the Northern New York Agricultural Development Program website at www.nnaygdev.org.

The Northern New York Agricultural Development Program is a farmer-driven research and technical assistance program serving Clinton, Essex, Franklin, Jefferson, Lewis and St. Lawrence counties.



Grass trial plot in NNY photo: Cornell University.