

April 2009 Issue

PENNSTATE



Cooperative Extension
Renewable and Alternative Energy



ENERGY UPDATE

April 27, 2009

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UPCOMING EVENTS

- Dairy Farm Energy Efficiency Training Workshop
16 June, 2009 at Lancaster County Farm and Home Center, Lancaster PA. Contact Peggy Fogerty-Harnish at muf17@psu.edu
- Greenhouse Energy Efficiency Training Workshop
23 June, 2009 in Ephrata, PA. Contact Peggy Fogerty-Harnish at muf17@psu.edu
- Community Scale Bioenergy Short Course
27 July, 2009 at Penn Stater Hotel and Conference Center, State College, PA. Contact Dan Ciolkosz at dec109@psu.edu

WELCOME!

This is our first edition of our renewable energy update from our Penn State Cooperative Extension Renewable and Alternative Energy Extension Group. Our hope is to provide you with an update on some of the projects and new initiatives we are working on in this new and exciting area. Penn State Extension has made renewable and alternative energy programming a priority. Our extension educators and faculty are working on many fronts to evaluate energy alternatives, develop strategies for using energy more efficiently and to educate youth, citizens, farmers and policy makers about the complex issues related to alternative energy development and improving energy efficiency.

Energy development issues are increasingly complicated as issues related to feedstock availability, carbon emissions and impacts on soil, water and other natural resources need to be carefully considered. We are working on helping each other understand these issues and help to develop alternative energy sources.

We are also committed to energy conservation..at home, on the farm, at school and in the workplace and will be sharing our ideas and projects on this important issue in the future. We are using a new electronic newsletter format which should help you interact with us more easily and help us manage it efficiently. To forward this newsletter to other folks who may want to subscribe, click the link on the bottom of the newsletter.

Sincerely,

Greg W. Roth
Program Leader
Renewable and Alternative Energy
Penn State Cooperative Extension

Tater Tots in the Tractor Tank?
[Waste Oil Recycling Project](#)

LINKS

[PSU Renewable & Alternative Energy](#)

[Steel City Biofuels](#)

[Coping with High Energy Prices](#)

[Biomass Energy Center](#)

As Penn State University Park dining hall residents fill up on french fries and tater tots, they will be unwittingly helping to fuel vehicles at Penn State. An initiative started several years ago by students at PSU will come to fruition in the fall of 2009 as PSU processes used waste vegetable oil (WVO) produced by the dining halls into fuel grade biodiesel.

In the past, the WVO made a trip off campus at a charge to the university. Now, the oil will stay here on campus, all 15,000 gallons used annually by the dining halls. This usage corresponds well to the needs of diesel powered vehicles used by the Office of Physical Plant for mowing, landscaping and other activities, as well as the University Farm tractors and equipment. Some of this equipment will use the biodiesel as a 100% fuel called B100, while other equipment requires a reduction in the blend to 20% biodiesel and 80% petroleum diesel, labeled as B20. Either way, the use of the biodiesel reduces emissions and increases the use of alternative fuels on campus while reducing the amount of waste sent off campus.

In the future, the university farm will grow canola and press oil in the amount needed by the dining halls. After use in food preparation, the WVO will be processed into biodiesel to be used in the tractors and equipment that grow and transport the crop. This model is an example of localized food and energy production, and will serve as a model for local efforts throughout the state.

Doug Shauffer, Farm Operations



Biodiesel In Your Engine New fact sheets released by Penn State

Biodiesel has been a hot topic in the last few years, and many people are considering producing and/or using this renewable fuel for their diesel cars, trucks, and equipment. However, many people are unsure whether or not this new fuel will work well (and safely) in their engine. Penn State has been working in this area for several years now, and has developed quite a bit of expertise on this topic, which is now available to all in the form of two new extension factsheets.

These fact sheets provide a very informative look at biodiesel fuel and its performance in diesel engines. The first document, titled "What's so Different About Biodiesel Fuel?" talks about the differences between biodiesel fuel and traditional petroleum diesel. The second, titled "Using Biodiesel Fuel in Your Engine" discusses the performance that can be expected when using biodiesel in an engine. Together, they provide an in-depth look at biodiesel that will allow farmers, equipment operators, and car owners to use biodiesel fuel with confidence. Order these full-color factsheets from the College of Agricultural Sciences Publications Distribution Center <http://pubs.cas.psu.edu/default.asp> or download the .pdf directly at <http://pubs.cas.psu.edu/FreePubs/pdfs/uc204.pdf> and <http://pubs.cas.psu.edu/FreePubs/pdfs/uc205.pdf>.

Dan Ciolkosz, Ag and Biological Engineering

Algae Update: Still Just Very Promising Report from the 2009 Algae Biofuels World Summit

In a recent trip to San Francisco I attended the Algae Biofuels World symposium to hear for myself the state of the infant industry. The symposium brought together academics, federal agencies, venture capital, start ups, biodiesel producers and airline companies for three days of presentations and panel discussions. It was clear from the very first presentation that considerable challenges remain before algae biofuels can be scaled up or compete with petroleum. Many algal strains yield large quantities of lipids or cellulose and some can be manipulated to produce petrochemical equivalents like biobutanol. People are excited about algae because it has the potential to take a large chunk out of petroleum consumption in the US and all of it could be produced, in theory, on a small amount of non-agricultural land. Making algae's potential a reality is tale of complications and setbacks. As of yet, algae is still just very promising.



For the full story, visit Asa's blog [here](#).

Asa Watten, Steel City Biofuels, Allegheny County Cooperative Extension



Biofuel Crop Trials Head to the Field Many New Projects Being Launched

As spring breaks around the state, many of our Penn State researchers are planning considerable work to continue to evaluate the potential of a wide range of crops for biofuels under Pennsylvania conditions. Marvin Hall and Rick Stehower will be expanding their work with switchgrass on strip mined lands, planting over 30 acres at a demonstration site near Clearfield. In the Northwest part of the state, Crawford County extension educators Joel Hunter and Dave Dowler will be expanding their oilseed project with camelina to include winter and spring canola plantings this year. Here on campus we will be expanding our work with sorghums harvested for biomass and will also be evaluating the sustainability of corn stover harvested for biomass. Our Farm Operations group will again be planting canola and other oilseed crops around campus, in part to be used as feedstock for the SVO tractor demonstration. They have also established a demonstration site with switchgrass and Atlantic coastal panic grass in a sensitive well head area. We will also be initiating some studies with miscanthus this year at both the Rock Springs and Landisville research farms. One team in the college led by Dr. Heather Karsten is initiating a new project entitled Sustainable Cropping Systems for Dairy Farms in the Northeast which will incorporate tactics to reduce fertilizer and energy inputs, utilize oilseed crops for energy and conduct operations with vegetable oil powered tractors. A common thread in all of the projects is to develop strategies that minimize the environmental impacts of biofuel crop production, look for ways to avoid competition with food and feed production and explore avenues for value added co-product development as part of these strategies.

Greg Roth, Program Leader, Renewable and Alternative Energy

Penn State and PA Fuels for Schools and Beyond Sustainable Energy for Penn's Woods

Of all the possibilities for renewable energy in the keystone state, perhaps one of the most under-appreciated opportunities is biomass energy. Modern biomass energy systems are a far cry from the smoky chimneys of the past - they provide clean, renewable, economical fuel that is easy to manage, locally produced and very sustainable.



Schools and small commercial facilities are ideal candidates for these systems, which typically use wood chips but can burn a wide variety of fuels. Several systems are in operation in Pennsylvania, the oldest being about 20 years old and the newest being at Kane High School and Wyalusing High School in the northern tier of the state. Many of these projects, however, would probably not have become a reality if it weren't for the support and assistance of the individuals who work together as the Pennsylvania Fuels for Schools and Beyond program.

This program is a collaborative effort of many organizations and individuals in the state, including the Pennsylvania DCNR, RC&D districts, manufacturers and consultants and Penn State. The group's objective is to promote the appropriate and sustainable use of biomass as a fuel in Pennsylvania. To meet that goal, the group provides educational training and technical assistance to organizations that are interested in using biomass as a fuel.

People are often hesitant at first about the concept, because of fears that the forests would be stripped bare if our biomass energy industry grew. However, as you look into the matter, you find that there is actually a big need for additional use of "low grade wood" as a management tool to help improve the quality of the forest. Biomass energy matches this need beautifully. In addition, there is potential to use the economic value of wood fuel as a means of rehabilitating abandoned mine lands and other marginal lands through the growing of trees and crops that, up to this point, did not have a market. While the estimates vary as to how much wood can be safely harvested, it is clear that there is a great deal of room for growth.

The next event to be held will be a public meeting for interested persons at the Timber 2009 trade show in Rock Springs, PA on May 29. If you are interested in learning more, the program's web site is also a great place to start: <http://www.pafuelsforschools.psu.edu>.

Daniel Ciolkosz, Biomass Energy Extension Associate

About Renewable & Alternative Energy

For more information on Cooperative Extension's Renewable and Alternative Energy Resources at Penn State visit our home page at <http://energy.extension.psu.edu/>

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