

# JUST FUELIN' AROUND

Volume I, Issue I

January - March 2008

## Welcome to the Newsletter!

by Matt Rudolf

Welcome, bienvenidos, and bienvenue to the first ever Piedmont Biofuels newsletter. We have talked about starting a newsletter for a very long time and at long last, here it is.

The purpose of this newsletter is threefold:

Firstly, it is an avenue for sharing news about the many projects, ideas, hopes and dreams that permeate the Piedmont collective mind. A common problem at Piedmont Biofuels is that the project grows and changes so rapidly, that even folks who have visited recently may not be up on our latest project ideas. One such major development is our push to collect waste vegetable oil on a commercial scale, which you will read about in this issue.

The newsletter is also an opportunity



**Matt Rudolf**  
Executive Director

to tell our members about upcoming events, such as the annual member meeting and the numerous talks, workshops and demonstrations throughout North Carolina that we attend throughout the year. Knowing about them ahead of time will allow coop members

to attend more of these events and give us more of a chance to interact with each other in public venues. The most important upcoming event is the Annual Member meeting, scheduled for April 12, in which we will hold elections for three coop board member positions, and give a presentation on the year of 2007 in review. Please mark your calendars now!

Finally, and most importantly, we hope this newsletter will strengthen the  
*(Continued on page 4)*



## Event Calendar

**Annual Member Meeting:**  
Saturday April 12th 1:00 to 3:00pm @ West End Wine Bar, Chapel Hill

**Fuel Making:**  
Tuesdays 5:30pm @ the Coop

**Coop Tours:**  
Sundays 1:00pm @ the Coop or by appointment for groups of 10 or more

**Upcoming Events:**  
**1st Annual Mardi Gras Ball**  
Saturday February 2nd, 7:00pm @ the Historic Chatham Mills "Big Room"

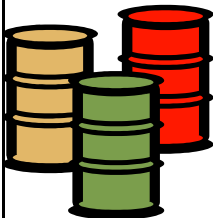
**Quarterly Grease Appreciation Dinner**  
Thursday February 21st, 7:00pm @ Carolina Brewery, Chapel Hill

**Biodiesel Agribusiness Conference**  
Wednesday March 5th 8:30am to 4:30pm @ Johnston Community College, Clayton

**Burt's Bees Ecofest 08**  
Saturday April 19th All Day @ Bicentennial Plaza Raleigh

## 55 Gallons at a Time

By Greg Austic



You may have heard that the coop is ramping up its oil collection business, where we go around to restaurants and cafeterias in the area to collect their used fryer oil. It used to be a fun biweekly intern activity, a break from fixing (and breaking) things back at the coop, but it's growing into something a bit more time consuming. Weekly oil runs are now commonplace and span the whole Triangle, from Greensboro to RTP to Pittsboro. It's no full time job, but it will be.

So what's our goal? Well, Piedmont Biofuels needs to get off chicken for all kinds of reasons, from cold flow to corporate farming. It's been a long and worthwhile affair with chicken, but its time to step up our own sustainability, both environmental and financial; it's time to start courting the local WVO (Waste Vegetable Oil) market.

Our goal is not an easy one by any means, and the hardest part is the sheer number of contracts. Most restaurants create between 50 and 100 gallons per month. Since we make about 80 thousand gallons of oil into

biodiesel every month at the industrial facility... that would take 800 restaurants worth of grease to cover our total need. That's a lot of people to interact with just to supply your oil, and many customers to provide a service to. Job number one is to get contracts – fast.

Most restaurant owners don't really care who takes care of their waste and what happens to their oil after it goes away. They may not even know that WVO gets used in cattle feed, cosmetics, lubricants and biodiesel. They probably haven't stopped to ponder which of these uses is better

*(Continued on page 2)*

# Biodigesters - Making Methane from Waste

By Caleb Daniels

In the quest for sustainability there are many paths to go by. Efficiency is key and working toward more localized networks of fuel, energy, and food are all on the list. The thing that excites me about the sustainability movement is finding ways to integrate systems and "close the loop." This is the reason I became interested in renewable energy and when I started to look at small scale applications and potential community based systems, biodiesel was first on the list.

The challenge of creating a closed loop system for dealing with two biodiesel by-products, washwater and glycerin sparked my interest in anaerobic digesters (or biodigesters.) As an intern I had been able to get the hands-on experience of making biodiesel and was now given the opportunity to work on my first biodigester project.

Anaerobic digestion is a lot like composting. Bacteria do most of the work and you end up with good fertilizer in the end. The difference is that in a biodigester there are different bacteria: those that live in an environment without oxygen. The system also breaks down organic material much faster (usually 20-30 days) and produces biogas in the process.

Biogas consists of mostly methane gas and some carbon dioxide. The

methane would be produced regardless and instead of letting it into the atmosphere we are able to capture the gas and burn it as a renewable energy source. Biogas can be used to cook or provide lighting, heat, and if

Biogas can be used to cook or provide lighting, heat, and if you have a gas turbine engine, you can create electricity.

you have a gas turbine engine, create electricity. It can also be compressed into CNG (compressed natural gas) which is, although energy intensive, a renewable fuel.

Digesters range from very low-tech to extremely complicated. We went mid range and designed a system that would allow us to control some of the variables such as heat in the two tanks, and the ability to adjust the flow rate. It's a plug-flow design which means that when we input a given amount, that much effluent will come out of the other end.

We had some help setting up our system from a fellow named Alex Eaton that works with the International Renewable Resources

Institute in Mexico. He designs and implements these systems all over Mexico. There are lots of digesters in India and China and there is growing popularity in Africa. For some villages, these systems are merely pits in the ground with a dome cover which provide most of the energy (with the exception of biomass – wood for heat.)

In addition to treating biodiesel washwater and possibly some of the glycerin, we're going to bring in some local manure to get a good bacterial culture. Then we'll experiment with the ability to treat the waste stream as well as harness some of the leftover energy content. The gas will be burned in a natural gas hot water heater and used to keep the system going and as we are able to create more gas we can start to incorporate some of this energy back into the biodiesel process.

We plan on feeding our new biodigester its inaugural five gallon bucket of manure soon and in the coming months we'll be producing biogas at the Co-op. Come down for our Sunday Tour if you are interested in seeing the system or any of the other happenings at the Co-op.

Caleb Daniels  
Intern  
Piedmont Biofuels  
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## 55 Gallons...

(Continued from page 1)

for the local economy, and the quality of their air. Their focus is making their business work – which isn't easy considering the rate at which restaurants turn over.

We try to get them to see our part and appreciate it, and sometimes people care – but most of the time they don't. For the most part we're rushing to compete with the big collectors for the oil that drips off

your hush puppies and we're finding that they have bigger trucks, bigger tanks, and a bigger staff.

But we have one thing those big oil collectors don't: 500 members who DO care about sustainability and who DO care who picks up the oil at their favorite restaurants. We have the marketing staff of a Fortune 500 company in our members, all we have to do is let them loose.

So go get 'em! Go tell the owner of your favorite restaurant who's picking up their oil, and what is it getting used

for. If they don't say it's going to Piedmont Biofuels or some local home brewer, then send them our way. Every restaurant we get on board is one 55 gallon drum closer to improving the quality and sustainability of the coop which you built and maintained for so long.

Thanks—Greg Austic  
(Greg is head of oil collection at the coop – if you know of any restaurants or cafeterias interested in using Piedmont as their oil collection service, send an email to greg@biofuels.coop or call 919-545-1083)

## Every Drop Counts— Rainwater Catchments

By Tim Angert

The summer was hot and dry, and the drought is still going, so it is extremely important to conserve water. Besides doing the normal things that you probably already do (like turning the water off when you brush those pearly whites) you may want to think of ways to collect rain water.

If you look around, you probably have a perfect area (your roof) that you could use to catch some of the rainwater that does fall. You can then use it to water that vegetable garden you're going to plant come spring, or whatever other majestic water-involving plans you may have.

To help people get started, Piedmont Biofuels is building rain water catchment systems. We offer a standard model, as well as a design-build service. For the more ambitious who may want to build a system of their own design, we are also selling 275-gallon totes.

Our fees are extremely competitive. For more information email [Tim@biofuels.coop](mailto:Tim@biofuels.coop) or go to <http://www.biofuels.coop/> and look for Rain Water Collection Systems under the services menu.



Tim at work on the rainwater catchment system at Piedmont Industrial

### **Businesses and Organizations that provide Used Oil to our Coop:**

#### **Pittsboro:**

Plaza Mexico Lindo  
Piggly Wiggly  
Our Neighborhood School  
Cambridge Hills Assisted Living

#### **Chapel Hill/Carrboro:**

Armadillo Grill  
Asia Café  
Blend Bistro  
Carolina Brewery  
Carrburritos  
Crook's Corner  
Elaine's  
Jujube  
Penang  
Sal's Pizza  
Sugarland  
Talulla's  
Village Pizza  
Carolina Meadows

#### **Greensboro:**

Elizabeth's Pizza  
Print Works Bistro  
Guilford College  
UNC—Greensboro

#### **Durham:**

Kim Son  
Six Plates Wine Bar  
The Wing Stop—MLK Parkway & Southgate  
Burt's Bees  
Duke Business School  
IBM Cafeteria

#### **Raleigh:**

Poole's Diner  
Blue Ridge—The Museum Restaurant

#### **Cary:**

Chick-Fil-A

As you go out of your way to patronize those businesses that make their used cooking oil available so that we (or you!) can make it into fuel for your ride, please remember to **THANK THEM.**



### **Piedmont Biofuels Quarterly Grease Appreciation Dinner**

**Feb. 21st, 7:00pm - ? at Carolina Brewery in Chapel Hill**

As grease collectors, we feel that locations that recycle their grease with us deserve a big "thank you" from us and our membership. As coop members and employees, we're tired of working all day and never taking a night off to enjoy the very restaurants that we collect grease from. So, we thought that a dinner for the employees and members of Piedmont Biofuels at one of grease collection locations would be a perfect fit.

So come on out to Carolina Brewery in Chapel Hill so we can have a good time and thank Carolina Brewery for the hundreds of gallons of their oil that we've made into biodiesel. The following geeky topics will undoubtedly be discussed by you and other self-proclaimed experts: biodiesel, Jetta TDIs, methanol recovery, ion exchange resins, how algae will save the world, why girls that work in biodiesel are so darn attractive, jatropha, orangutans squeezings, old Mercedes, veggie oil conversions, the two tank vs single tank debate, source for the best oil in the triangle, lowest temperature run without gelling on B100, and other interesting topics. **See You There!**

## Welcome ...

*(Continued from page 1)*

bond between the core group that practically live and breathe biodiesel everyday, and the 540+ members that have varying degrees of involvement in the project. Regardless of whether you come out to help make fuel every Tuesday night, or you just fill up on the good stuff once a week, the newsletter will help you feel more connected to the daily happenings at the cooperative. We think that hearing stories from our interns and staff will help demonstrate the value of the work that we do, inspire more of our members to get involved and help us to continue to grow and develop as a group.

We have an incredible set of interns this year, with Caleb Daniels returning for another semester as senior intern and



Coop Members fueling up at the "Tami Tank", on Farm Tour Day in April 2007

production manager, and Tim Angert starting up after running his own Appleseed reactor in Pennsylvania. We are churning out over 1000 gallons of fuel a month now at the coop, and have a number of interesting projects in the works, including an anaerobic biodigester that you will also read about in this issue. So if you have

been feeling the lonely winter blues, and are looking for something to do on a Sunday afternoon please consider coming out for a tour of the cooperative. Tours are free and open to the public, and start at 1pm sharply every Sunday. Directions are available on our website.

Lastly, we are looking for a good title for our new newsletter and are looking for your ideas. The coop member that comes up with the best title will receive a coupon for 10 free gallons of waste veggie oil-based biodiesel. Please submit all entries to [matt@biofuels.coop](mailto:matt@biofuels.coop)

Again, welcome and thanks for your support!

Matthew Rudolf  
Executive Director

**Piedmont Biofuels** is a worker and member owned cooperative. Our mission is to lead the grassroots sustainability movement in North Carolina by using and encouraging the use of clean, renewable biofuels. We are involved in a wide variety of undertakings in support of this mission:

- We provide pure biodiesel (B100) to the community.
- We maintain a top quality biodiesel plant where worker-members can make their own fuel from locally collected waste vegetable oil.
- We have a USDA Registered Research Farm where we do oilseed crop research and run a market garden for wholesale and sale at our local farmer's market.
- We have an elaborate glycerin vermi-composting project.
- We do education and outreach on both biodiesel and engine modifications that enable people to use straight vegetable oil (SVO) as fuel.
- We lobby the North Carolina legislature, as well as our national representatives, on behalf of biodiesel and alternative fuels.
- We have an intern program that allows people to live on site and learn about all facets of our operations..



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