



RIVERHILL FARM ALTERNATIVE ENERGY PROJECT

Experimenting with Alternative Energy Sources

PROJECT GOAL

Using farm resources to generate enough fuel to significantly off-set energy needs.

COMMUNITY AND ECONOMIC BENEFITS

- Support of local agriculture economies.
- Significant cost savings realized with increased energy efficiency.
- Creation of marketable, nutrient-rich products (i.e., poultry litter ash and biochar products) using alternative energy sources.
- Decreased transportation requirements and costs because less animal waste is moved off-site.
- Championing new, successful technology leads to peer-to-peer learning opportunities and knowledge sharing.

ENVIRONMENTAL BENEFITS

- Reduced reliance on fossil fuels.
- Decreased amounts of animal waste and its associated nutrients.
- Healthier water quality.
- Improved energy efficiency.

CONSERVATION PROJECTS INSTALLED

- Planting of oil-rich canola seeds.
- Extraction of oils from soybeans and canola seeds to create biodiesel to fuel farm equipment.
- Manure treatment combustion.
- Manure treatment pyrolysis.
- Purchase and use of a corn-burning boiler.
- Purchase of an LEI Bio-Burner 500 to burn wood chips and poultry litter to heat barn floors.



“ We create around 6,000 gallons of biodiesel annually at a cost of \$1 per gallon, saving us anywhere from \$6,000 to \$18,000 per year depending on the current price of petroleum.

- **Glenn Rodes**
Owner, Riverhill Farm

PROJECT SUMMARY

Glenn Rodes raises turkey, dairy and beef cattle, and grows corn, grass, soybeans, canola and hemp on his family's 860-acre farm in rural Port Republic, Virginia. He has experimented with alternative energy sources since the early 2000s, purchasing a corn-burning boiler to supplement the traditional propane-heated system for the farm's turkey houses. Rodes then began creating biodiesel from the soybeans and oil-rich canola seeds that he grew on the farm, which currently generates around 6,000 gallons of biodiesel annually, which powers farm equipment such as tractors and irrigation pumps. Additionally, Rodes burns wood chips and poultry litter to heat water, which is then piped underneath the floor of the turkey barns to keep them warm. This creates a lower relative humidity environment that requires less ventilation, saving additional energy costs and creating a new, nutrient-rich product, drier poultry litter, which is better for burning. He is currently experimenting with hemp fibers and oil in his biodiesel production, as well as carbon-rich biochar that he plans to use as an ammonia-reducing amendment for bedding material in the poultry houses.

THINGS TO CONSIDER

- Alternative energy projects require you to pay close attention.
- Be prepared to deal with repairs and failures when you are an early adopter of new technology.

THE PARTNERS AND FUNDING SOURCES

- 2010–2015 Chesapeake Bay Manure-to-Energy Initiative
- Sustainable Chesapeake
- USDA Natural Resource Conservation Service
- Virginia Tech
- Bay Journal
- Virginia Cooperative Extension
- James Madison University
- Earned income from farm resources

CONTACT

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Soybeans are crushed during the beginning of the process of creating biodiesel. (Photo: Glenn Rodes)



Wood chips and poultry litter burn in the combustion chamber of the bio-burner. (Photo: Glenn Rodes)



A brooder turkey barn is equipped with under-the-floor pipes that carry heated water from the bio-burner. (Photo: Glenn Rodes)



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