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Introduction

Rising energy cost is a significant factor in increasing the cost of agricultural production. Rising energy costs drive up prices for fuel and electricity directly, and costs for feed, fertilizer, and transport indirectly. The economic feasibility of growing oilseed crops or implementing biogas digesters or solar panels will depend on current and future costs and the availability of alternative sources to fossil fuels like oil, coal, natural gas, and nuclear power, on which we currently depend heavily. The fossil fuel costs will most likely increase, however, the rate is unknown, and so there is flexibility for personal assessment of the economic viability of some these renewable energy options.

Grow Your Own Fuel

Oilseed crops such as sunflower, canola, and soybean can be grown for the pressed oil which can be burned in diesel engines. This only makes sense if the energy required to grow the crop and press the oil is significantly less than the energy value of the fuel output. Consider labor, tractor-time, fertilizer, herbicide, and pesticide costs, as well as pressing costs when assessing the feasibility of growing fuel. In Massachusetts, where farms are relatively small, cooperative purchase of a press may make growing your own fuel more affordable.

Crops that can be burned without processing, such as switchgrass and grain corn, can fit into some dairy operations. Switchgrass is a perennial crop which has minimal fertility requirements, so after establishment there is little growing cost. It may be grown on marginal land which would be unsuitable for row crops and too remote for pasture. Pelletizing switchgrass may have significant associated costs, but as with the oil press, the cost of a pelletizer may be shared among several cooperative owners. For a dairy farmer, growing grain corn to burn may require little additional work or expense if corn is already being grown for grain feed. Corn driers burn a small amount of corn in comparison to the more traditional propane used dry a lot of corn.

Biogas Digesters for Producing Burnable Gas

Biogas digesters, taking in manure and turning out electricity, serve multiple purposes. Firstly, they produce gases which can be burned to generate heat and/or electricity. Secondly, biogas digesters capture methane and precursors to methane which would otherwise contribute to greenhouse gas emissions. Thirdly, biogas digesters leave a spreadable fertilizer as a byproduct. The technology and design of the units is changing as more are being built. Generally, the units require a large enough volume of material that they are built by farmers with help from government grants.

Solar Panels for Water Heating

State and federal incentives for solar hot water production come and go. Check current policies when in the early planning stages of a project. Solar hot water systems are relatively uncomplicated, and may be used to boost water temperature for both forced hot water space heating systems and for domestic/farm hot water systems.

Solar Panels for Producing Electricity

Solar systems for electricity generation are much more complex and expensive than those used for hot water. They may be an economically viable alternative, though, as opportunities to sell electricity sent into the power grid increase. It may even be possible to site panels in such a manner as cows can graze beneath them. There is a photovoltaic system currently under construction at the Crops and Animal Research and Education Center (CAREC) in South Deerfield, MA. The effects of shading the panels on pasture quality beneath the panels are a focus of study. Cows will be grazed under the raised panels.

Resources

Massachusetts alternative energy incentives:

<http://www.mass.gov/?pageID=eoeesubtopic&L=3&L0=Home&L1=Energy%2c+Utilities+%26+Clean+Technologies&L2=Renewable+Energy&sid=Eoeea>

State and federal incentives for energy efficiency and alternative energy production:

http://www.mass.gov/?pageID=eoeeterminal&L=4&L0=Home&L1=Energy%2c+Utilities+%26+Clean+Technologies&L2=Energy+Efficiency&L3=Energy+Efficiency+for+Businesses+%26+Institutions&sid=Eoeea&b=terminalcontent&f=doer_Energy_Efficiency_Federal_and_State_Incentives&csid=Eoeea

Federal grant opportunities to aid in construction of alternative energy projects:

<http://www.epa.gov/agstar/tools/funding/incentive/USvalueaddedproducergrants.html>

Solar Rating and Certification Corporation rates manufactured products. www.solar-rating.org/

For more information visit www.umass.edu/cdl

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