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On-farm Energy Conservation

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On-farm Energy Conservation and Efficiency

Recommended Practices

Take advantage of cost-sharing opportunities.

National Grid (NGrid) offers some financial incentives to help farmers make changes and reduce their energy costs. If your farm is in the NGrid service territory, you may be eligible for rebates to install several new technologies.

NGrid has an incentive program for commercial customers, including farms. These can help reduce the cost and the payback time for purchasing and installing more efficient electrical equipment.

NGrid considers measures on an individual case basis, and all proposed improvements are subject to NGrid's approval. In general, a farmer can receive rebates for:

Variable Frequency Drives installed on vacuum pumps and ventilating systems.

Three phase motor replacements for motors of 1 horse power or greater. The rebate varies with the amount of horsepower being replaced.

NGrid will rebate a certain amount for each qualifying hardwire lighting fixture, for example tube fluorescents or outdoor incandescent floodlights that are upgraded, provided it meets certain performance criteria. (NGrid will also take care of the proper disposal of the old lamps and ballasts.)

Consider utilizing farm energy calculators to assess energy use.

Farm energy calculators are planning tools designed to help producers save electrical energy, fuel or fossil-fuel-based fertilizers. Go to http://attra.ncat.org/energy_calculators.html.

The USDA Self-Assessment tool helps farmers conserve energy and explore renewable energy options. The energy conservation tools include irrigation, greenhouses, lighting, and ventilation and others. Renewable energy tools are provided for solar water heating, solar electric (photovoltaic), wind turbines, biomass, and biogas.

Make your irrigation system as efficient as possible.

Maintenance and efficiency are key components to on-farm energy conservation for cranberry growing. Keep irrigation engines serviced and well-tuned. Make sure electric motors, switches, and control panels are clean and free of dirt, insects, or bird nests. Check for proper belt tension and alignment. Check connections to ensure they are tight, and lubricate moving parts that require it.

Use an irrigation scheduling method to time irrigations for more efficient fuel and water use. Start irrigation before soils are completely dry.

Properly maintain trucks and tractors.

Regularly scheduled tune-ups can save 10% on fuel usage. Keep tires properly inflated.

Avoid lengthy idling. Idling can consume 15 to 20% of the fuel used.

Run equipment in the proper gear for the load.

Clean or replace air filters, and use appropriate equipment ballast to keep wheels from slipping and using more fuel. Keep tires properly inflated.

Practice good nutrient management.

With high energy prices, sound nutrient management is more important than ever. Start with soil testing. Soil testing allows you to optimize applications of nitrogen fertilizer, which is influenced by natural gas prices. Also, consider other fertilizer sources such as animal manures where available.

Calibrate application equipment for uniform application.

Apply nitrogen fertilizers close to the time of actual crop need. As always, use environmentally sound management practices to keep fertilizer out of water sources.

Conserve electricity.

Replace 3 hp or larger motors with high efficiency ones to reduce electric consumption by 2 to 5%.

Install motion detectors to control security lights so they are not on all the time.

For more information:

Alternative farming systems information center. http://afsic.nal.usda.gov. Click on Farm Energy Options/On-farm energy efficiency.

Bonner J., J. Thomas, H. Wilcutt, M. Broome, and L. Oldham. 2001. **Reduce Energy Costs in Agriculture.** Mississippi State University Extension Service. Information Sheet 1621. http://msucares.com/pubs/infosheets/is1621.html. (portions of this BMP are excerpted from this publication).

Energy calculators. http://attra.ncat.org/energy_calculators.html.

Energy tips for irrigators. http://attra.ncat.org/attra-pub/energytips_irrig.html.

Comparing energy use in conventional and organic cropping systems (summary). http://attra.ncat.org/attra-pub/summaries/croppingsystems.html.

Maintaining irrigation pumps, motors, and engines. http://attra.ncat.org/attra-pub/maintaining_pumps.html.

MDAR's Energy efficiency, conservation and renewable program. Contact Gerry Palano at Gerald.Palano@state.ma.us or 617-626-1706. http://www.mass.gov/agr/programs/energy/

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On-farm Energy Conservation and Efficiency Checklist

✓ Practice good nutrient management.

✓ Consider used oil as equipment fuel.

✓ Keep equipment maintained.

✓ Keep irrigation engines serviced and well-tuned.

✓ Consider the cost of different fuels in terms of energy value.