



ENERGY AND BIOPRODUCTS

Plugged into the Future: Energy Innovation

New perspectives on energy production and conservation developed by land-grant universities are helping to show the way forward into powering farms, businesses and communities.

SUCCESSFUL EXAMPLES INCLUDE:

- **Iowa** researchers, in partnership with local farmers, are developing fields of dedicated biomass energy crops to replace coal for an entire university campus by 2020. The goal is to establish 2,500 acres of miscanthus, a perennial grass. Researchers are providing science-based management and assistance, plus running models that show the potential economic and environmental benefits of growing biomass on previously unprofitable farmland—including a 38% reduction in nitrate loss into waterways.
- Emissions trading, also called cap-and-trade programs, is one way industry can reduce pollutants or greenhouse gases through regulated trading of permits for each ton of emissions. A study by **Wisconsin** researchers found these policies could disproportionately harm poor communities, which see fewer reductions in pollutants. The work provides new insights into social aspects linked to pollution dispersion.
- Aging, inefficient grain dryers are big energy suckers on the farm. **Kentucky** Extension agricultural engineers

conducted nearly 80 on-farm energy audits to identify applicants eligible for federal and state cost-share funds to upgrade to high-efficiency grain dryers. Over \$2.2 million in cost-share funds were made available. The energy audits estimated \$9,200 in annual energy savings per farm, or \$727,000 per year for all audited producers.

ONE SMALL STEP FOR MICROBES, ONE BIG LEAP FOR BIOFUELS

A new technology developed by **Ohio** researchers advances the promise of biofuels by using microbes to break down biomass and degradable wastes. The patented discovery combines two kinds of oxygen-less digestion, resulting in improved efficiency, lower costs and increased production of biogas.

The research identified food wastes as the most promising feedstock for the new combined technology. Food waste digestion increased the yield of biogas by up to 150% over other sources. As the technology nears industry adoption, it could improve the value of feedstocks for producers and reduce the amount of wastes previously destined for the landfill.

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ABOUT LANDGRANTIMPACTS.ORG

The Land-Grant University System is a uniquely American institution, and has operated successfully for more than a century. The landgrantimpacts.org website documents and demonstrates the collective and individual impacts of the national system of joint teaching, research, and extension institutions.

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