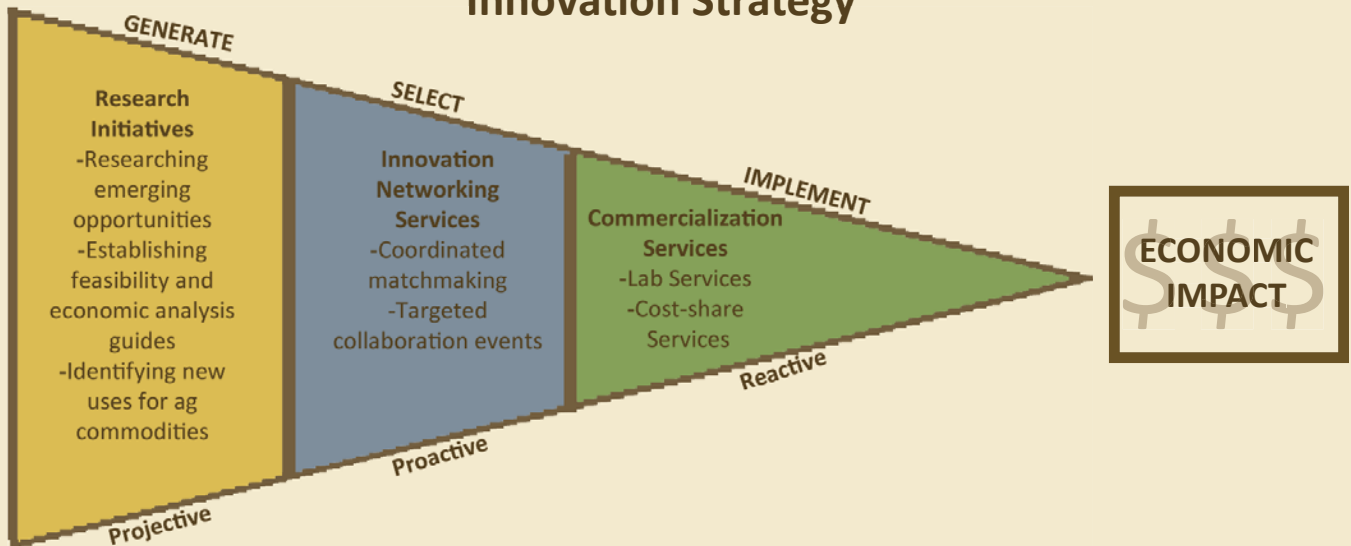


Creating innovation in rural economies

Innovation Strategy



- **Generate:** Ideas for innovation come from research, conversations, brainstorming and networking.
- **Select:** Work across organizations to determine the highest impact research and projects. AURI does this through the Rural Innovation Network, Minnesota Renewable Energy Roundtable, annual stakeholder assessments, needs assessments and more.
- **Implement:** Bring together the right organizations and people together to implement the ideas in the marketplace. Research is just the beginning, not the end.

Critical components to rural, science-based economic development

Collaboration

Collaboration with other organizations is critical during every step of innovation

- Working together we can achieve much more than we can alone.
- Usually, one organization's work and research will align well with another organization's work and research.
- Limited dollars are a challenge for many organizations today, so it is essential we collaborate to maximize funding, priorities and anticipated results.



Unbiased Information



Banks and others looking to collaborate on a new business venture need unbiased information. It is essential to provide them unbiased information. This is not always possible when a contractor's payment or business model relies on future business from the client. AURI's funding model—through state dollars, grants and collaborations—allows us to give unbiased information.



Agricultural Utilization Research Institute

Generate-Select-Implement at work at AURI

Fertilizer from biomass ash

Product: NAFMicro, a biomass ash fertilizer derived from incinerated poultry manure, produced by North American Fertilizer of Benson, Minnesota.

Initiative: Minnesota's biomass energy sector produces large amounts of ash from incinerated plant and waste material. The ashes contain nutrients, such as phosphorus, potassium and sulfur. Energy companies needed to know the fertilizer value of the ash they were producing.

AURI sponsored biomass ash fertilizer trials on corn at the University of Minnesota. The field trials found that ashes from two sources—the Corn Plus ethanol plant in Winnebago, Minnesota, and the Fibrominn poultry litter power plant in Benson, Minnesota—were good alternatives to conventional fertilizer.

Better handling methods for powdery ashes were also needed. AURI helped identify an ash granulation process that could be mixed with commercial fertilizer and spread with conventional equipment.

Dissemination: AURI made the fertilizer trial data available to Minnesota biomass energy producers and also demonstrated the granulizing process. A group of entrepreneurs led by Randy Tursteeg of Olivia, Minnesota, saw a market in central Minnesota for the 110,000 tons of ashes coming out of Benson's Fibrominn power plant each year.

Commercialization: AURI helped North American Fertilizer with plant set-up and sponsored additional fertilizer trials to refine rate recommendations for corn and other crops. The biomass ash fertilizer—worth more than \$10 million in retail sales—is sold as NAFMicro through Midwest fertilizer suppliers.



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