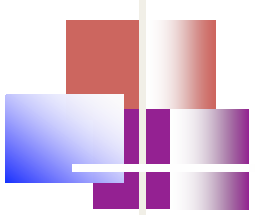


RIM-CE - Related Clean Energy Activities - UMN

Reinvest in Minnesota Clean Energy
Technical Review Committee Meeting
Tuesday, September 11, 2007
10:00 a.m. – 4:00 p.m.

Dean Current
Center for Integrated Natural Resources and Agricultural
Management/UMN

Areas of Research



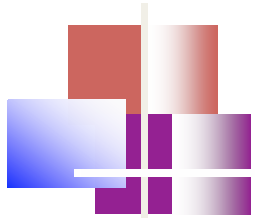
- Crops – agronomic/silvicultural practices
- Production systems – field to plant
- Environmental impacts
- Conversion technology
- Economics – Full cost accounting



Initiative for Renewable Energy and the Environment (IREE)

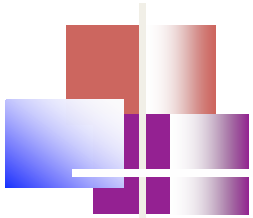
- \$17 million – leveraged \$14.5 million
- Mission is to promote
 - statewide economic development,
 - sustainable, healthy, and diverse ecosystems, and
 - national energy security
 - through development of bio-based and other renewable resources and processes

Crops – agronomic/silvicultural practices



- David Tilman's work on prairie mixes
- Perennial cropping systems – Green Lands Blue Waters Initiative
- Cover crop research
- Woody crop improvement
- Matching biomass species to landscape position
- Maximizing energy through crop production

Production systems – field to facility



- Densification through pyrolysis
- Proposed work with Rahr Malting/public-private partnership
- Transport models to predict transport cost in dollars and energy



Environmental Impacts

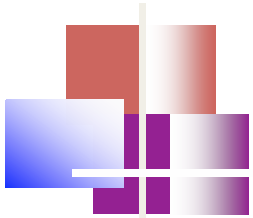
- Minnesota Terrestrial Carbon Sequestration Project
- Impacts of perennial cropping on water quality (TMDL's)
- Full cost accounting
- Guidelines for brushland harvest and forest residue removal
- Carbon sequestration in wetlands



Conversion Technology

- Conversion of cellulose to biofuels
- Maximizing energy through crop production
- Renewable hydrogen energy from the farm – hydrogen from biomass
- Integrated biorefinery approach to biofuels
- Pyrolysis for distributed processing and low water or water free conversion technology

Economics – Full cost accounting



- Full cost accounting of renewable and conventional energy sources
- Production economics of energy crops
- Payments for environmental services – water quality, carbon, and others.

Questions?

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