Conservation, Energy Security and Jobs
With Biomass Crops – How Do We Get There From Here?

Nick Jordan, Agronomy & Plant Genetics, University of Minnesota
Multifunctional bioenergy crops can create private wealth & public value
Cedar Rapids Data

Number of Days With Total Precipitation Greater Than or Equal to

- Years having more than 8 days: 2
- 4.2 days
- 57% increase
- 6.6 days

13 inches

$R^2 = 0.0816$

Graph showing precipitation data from 1895 to 2007.
Reganold et al. 2011 *Transforming U.S. Agriculture*

“Transformative change looks to whole-system redesign rather than single technological improvements.”

“…change is hindered by market structures, policy incentives, & uneven development & availability of scientific information…”

“…implementation will require organizations spanning political & institutional boundaries & integrating…from research to on-farm implementation, to markets, and to the dinner table.”
New cross-sector institutions for transformation

What are these all about?

• ‘Innovation System’ Approach to link technological, economic, social, & policy innovation together for transformation

• Emphasis on pilot scale-up projects that link & leverage resources of private enterprise, research, NGOs and government at new biophysical, social & economic scales

• Now being explored by several regional groups
What should the landscape look like?

How should it work?

Significant risks of NIMBY & LULU!!

Innovation must address landscapes & land-use... not just ‘technology’

Anna Claussen
Innovation must connect new technologies & enterprises into supply-value chains that are viable economically, socially & environmentally.

Risk of NIMBY & LULU...

Bioenergy supply-value chain
Rural Advantage, Fairmont MN
Innovation must address policy & regulation

- **EQIP** - Environmental Quality Incentives Program
- **WHIP** - Wildlife Habitat Incentives Program
- **CSP** - Conservation Stewardship Program
- **CRP** - Conservation Reserve Program
- **WRP** - Wetland Reserve Program
- **BCAP** - Biomass Crop Assistance Program

**MANY relevant policies…(see above!)**

How can policies interact to drive innovation?

Needed: More synergy, less conflict, confusion…
A ‘Landlab’ Innovation System for Regional Bioenergy Systems Development

Landlabs couple biophysical, economic & policy innovation

Jackson, Jordan & Landis, 2011