

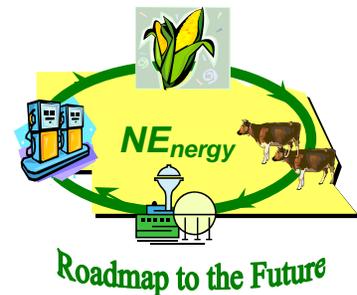
Nebraska's Bioenergy Future: Comparative Advantages and Opportunities

Kenneth G. Cassman

Roger Elmore

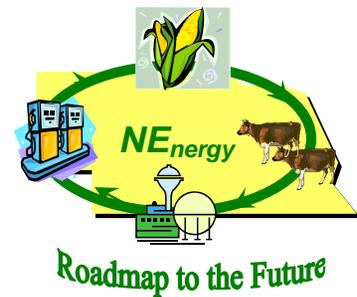
Patty Hain

University of Nebraska--Lincoln



What Is a Nebraska Biofuel Energy Roadmap?

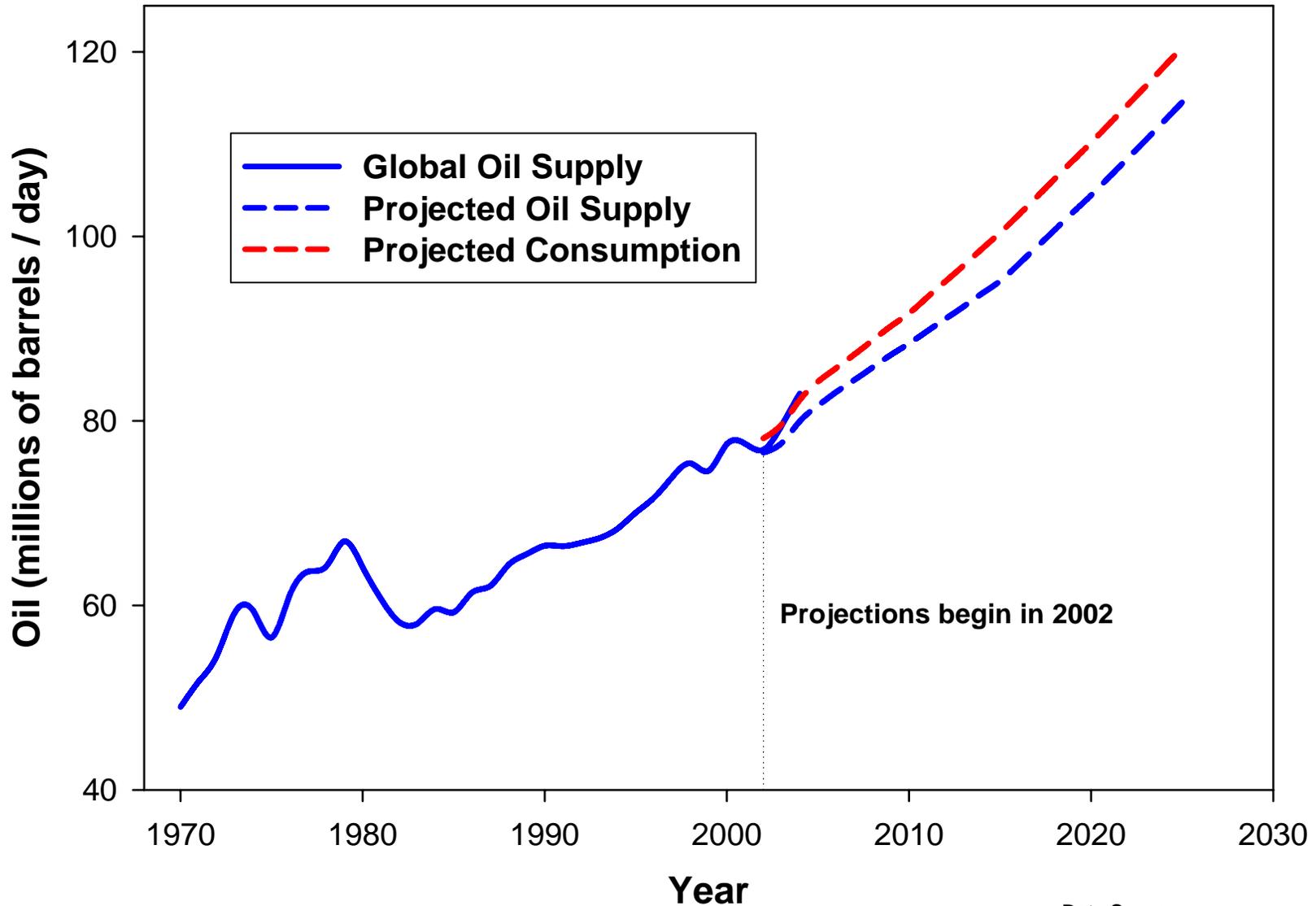
- **A strategic plan that identifies the greatest opportunities for investment in the biofuel energy industry to optimize economic, social, and environmental benefits**
 - **A good Roadmap:**
 - **Is based on comparative advantages**
 - **Recognizes existing constraints**
 - **Identifies actions to alleviate constraints**
 - **Prioritizes opportunities for new initiatives and investments by both public and private sectors**
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The Time is Right!

- **Concern about high energy prices and dependence on imported oil**
 - **New energy bill in Congress that promotes biofuel production (8 billion gallons by 2012)**
 - **Chronically low grain prices and excess grain and biomass production capacity**
 - **Critical need for economic development opportunities and jobs in rural communities**
 - **Growing concern about global climate change and greenhouse gas emissions**
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Global Oil Supply and Consumption



Projections begin in 2002

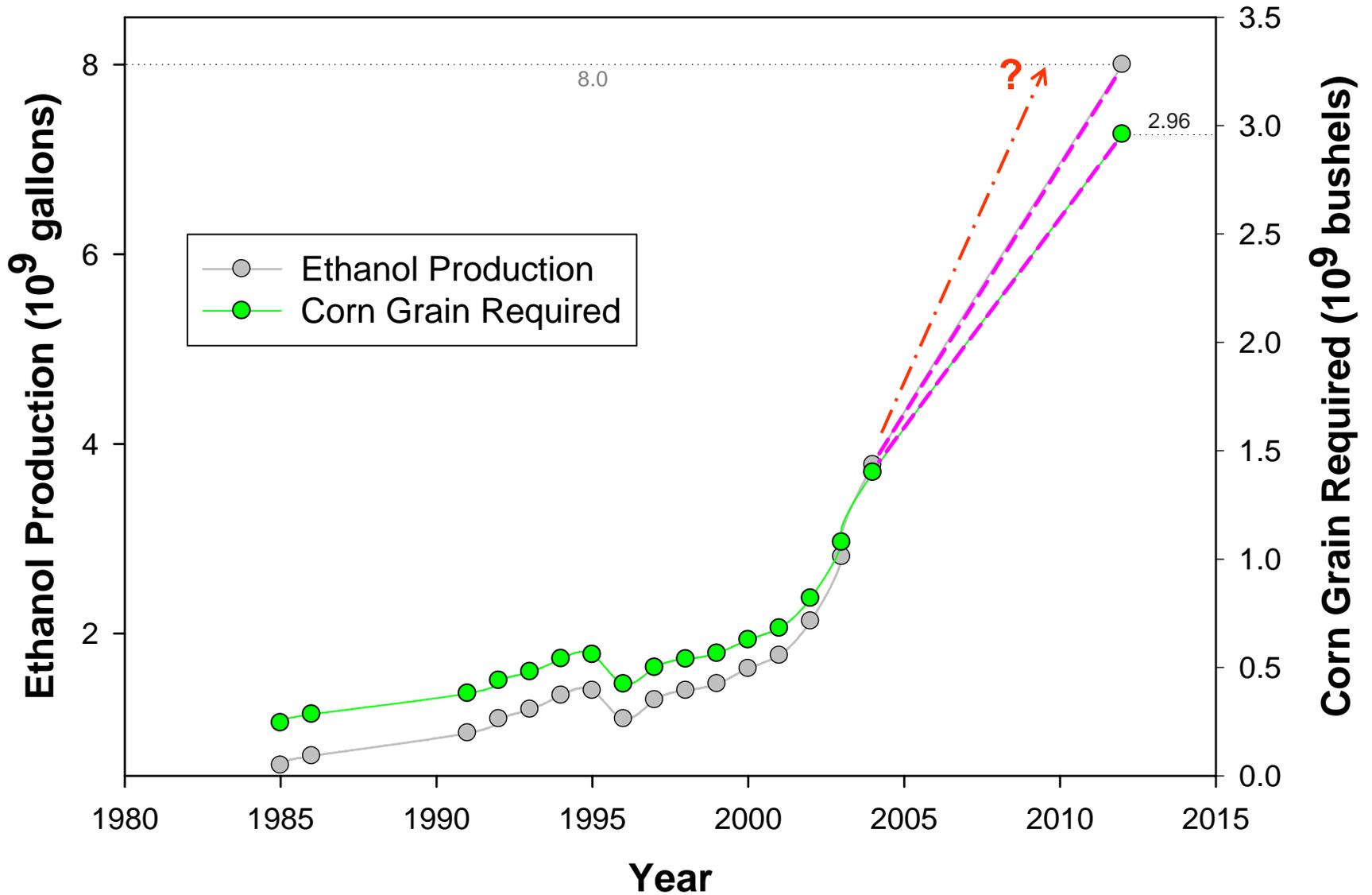
Data Source

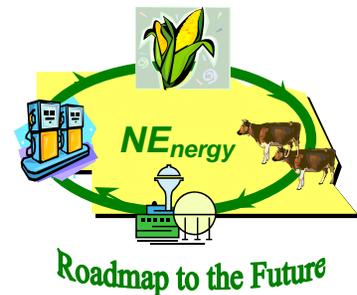
DOE's Energy Information Administration

Historic: <http://www.eia.doe.gov/emeu/international/petroleu.html>

Projections: http://www.eia.doe.gov/oiaf/aeo/aeoref_tab.html

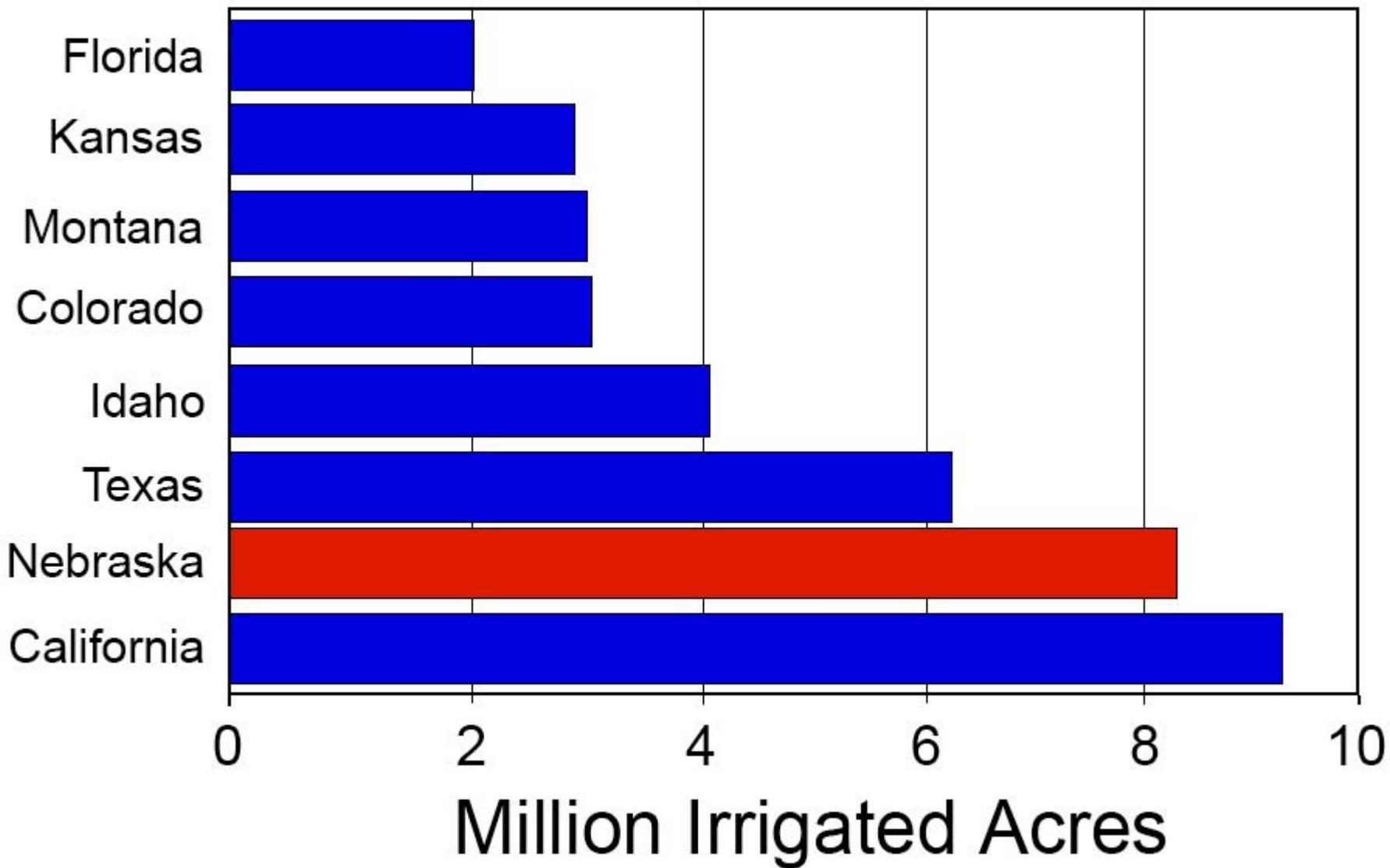
US Ethanol Production





What are comparative advantages for investment in biofuel energy?

- Natural resource endowments
 - Human resources
 - Education and training capacity
 - Consistent supply of grain and biomass feedstocks at reasonable prices
 - Existence of synergistic supporting industries
 - Research capacity for innovation and support
 - Transportation infrastructure
 - Favorable government policies and economic incentives
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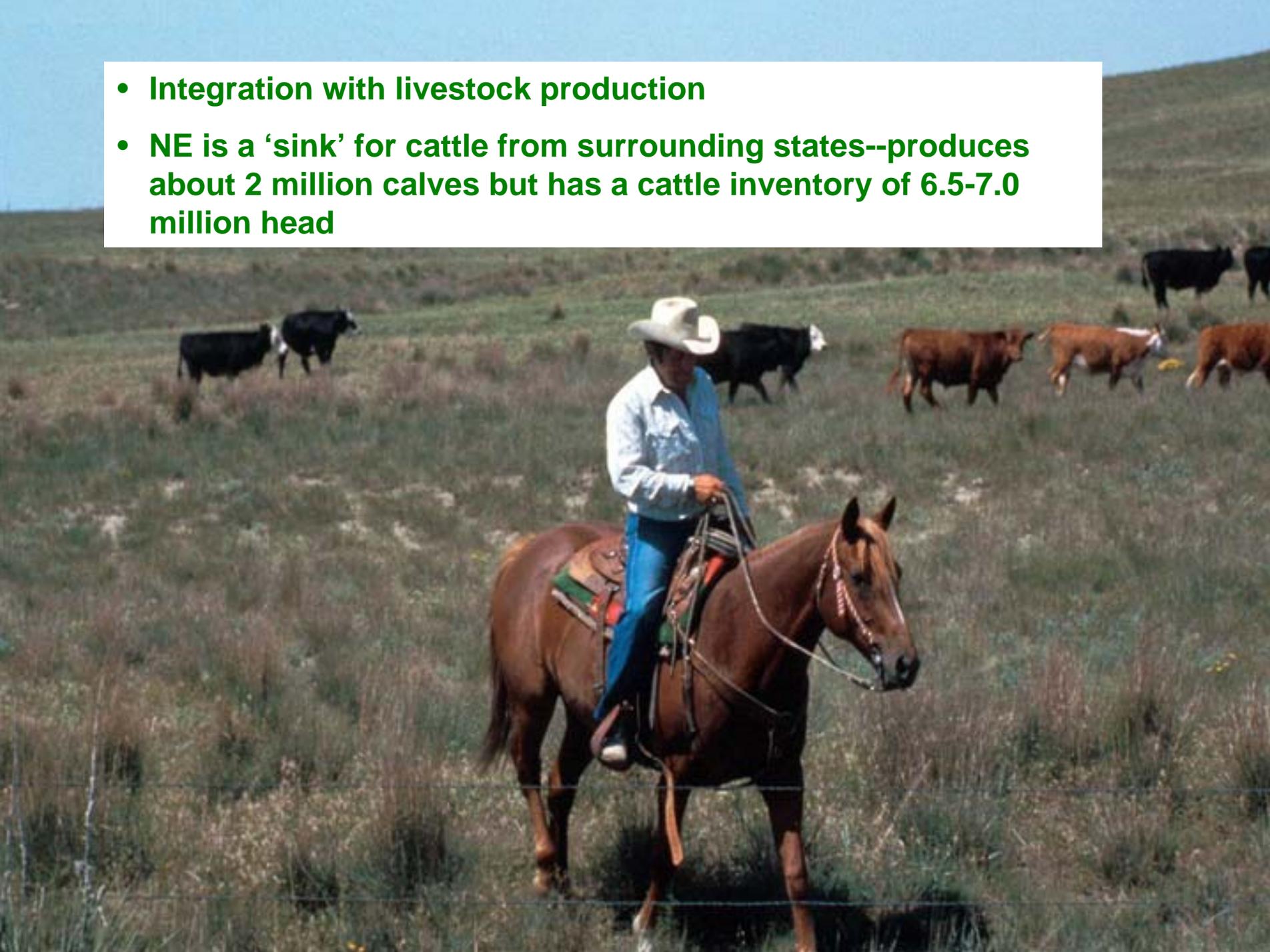
- **Third in USA corn production—75% from irrigated land**
- **Untapped production capacity: average yields are only 60% of yield potential**





Nearly 5 million acres of soybean—about 50% from irrigated land

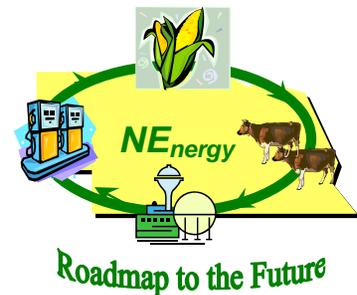
- **Integration with livestock production**
- **NE is a 'sink' for cattle from surrounding states--produces about 2 million calves but has a cattle inventory of 6.5-7.0 million head**





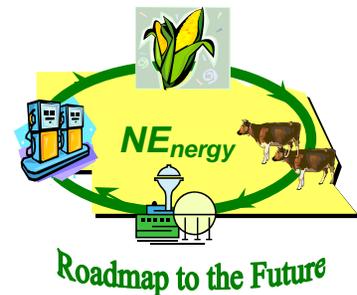
- 4.5 million in feedlots
- 6.5 million head slaughtered each year





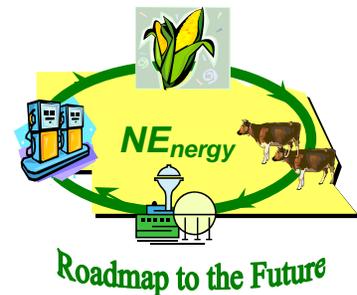
Potential focus areas for research and education

- Biotechnology and genetics to improve crop feedstocks for biofuel production
 - Bio-industrial process engineering
 - Graduate school programs (MSc & PhD)
 - Undergraduate programs & distance education
 - Environmental science of biofuel energy systems (life-cycle energy efficiency and yield; bio-refineries integrated with livestock; impact on carbon sequestration, GHG, and water quality,)
 - Economics, policy, and rural development
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Is it good public policy to invest in the biofuel energy industry?

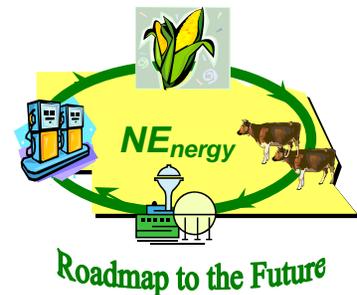
- Yes, if we can develop integrated crop and livestock biorefineries that can:
 - Produce substantial amounts of transport fuels to replace imported oil
 - Yield much more energy than they use
 - Provide well-paying jobs in rural areas
 - Improve soil and water quality
 - Result in a net reduction in greenhouse gas emissions
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Remainder of today's program

Presentations:

- **Biofuels Production: Implications for the grain industry and consumers.** Roger Conway, USDA Energy Policy Office
- **Iowa's vision and roadmap for a bioeconomy.**
Robert Brown, Iowa State University
- **Efficiency and energy yield of NE corn-ethanol systems,**
Dan Walters, University of Nebraska
- **A biorefinery for Mead, NE.** David Hallberg, E3 Biofuels LLC
- **Opportunities & Challenges for biodiesel.**
Loren Isom, University of Nebraska
- **A starch and biomass energy plant in York, NE.**
Asif Malik, Abengoa Bioenergy Corporation
- **Imperial NE biomass energy project.** Bob McGrath, Chase County USDA Farm Service Agency
- **Video comments from Mike Johanns, Secretary of Agriculture**

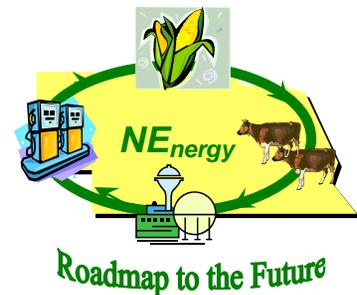


Remainder of today's program

Breakout Session Discussions (1:25-3:00PM):

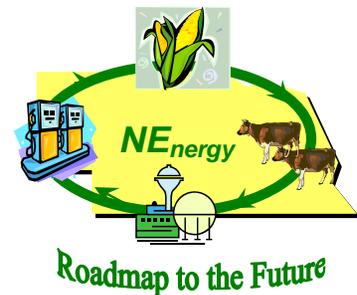
- **Identifying Nebraska's comparative advantages for investment in the biofuels industry**
 - Facilitator, Frank Thomas, NPPD; Recorder, Patty Hain, UNL
- **Public sector research priorities**
 - Facilitator, Mark Brohman, NE Game & Parks; Recorder, Vikki Miller, UNL
- **Education, training, and information needs**
 - Facilitator, Chuck Hassebrook, CFA; Recorder, Don Lee, UNL
- **Policy, market development, infrastructure, and capital investment needs**
 - Facilitator, Corrine Pederson, NMPP; Recorder, Dick Clark, UNL

Final plenary reports from breakout sessions (3:15-4:00PM)



Thanks

- Governor Heineman and invited speakers
 - Facilitators and Recordors
 - Workshop Steering Committee
 - Merlyn Carlson, USDA Deputy Undersecretary
 - David Hallberg, E3 Biofuels LLC
 - Duane Hovorka, Nebraska Wildlife Federation
 - Asif Malik, Abengoa Bioenergy Corporation
 - Scott Merritt, NE Corn Growers Association
 - Larry Pearce, NE Energy Office
 - Ken Cassman, University of Nebraska
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Workshop Support

- **Nebraska Energy Office**
 - **University of Nebraska Institute of Agriculture and Natural Resources**
 - Workshop lunch and refreshments compliments of:
 - **Abengoa Bioenergy**
 - **AGP, Inc.**
 - **Cargill**
 - **Nebraska Public Power District**
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