

Minutes of the  
**EMPOWER NORTH DAKOTA COMMISSION**

May 1<sup>st</sup>, 2014  
Northern Great Plains Research Laboratory  
1701 10<sup>th</sup> Avenue SW Mandan, ND

**Members present:**

Al Anderson, Ron Day, Ron Ness, Dale Niezwaag, Mark Nisbet, Mike Rude, Jay Skabo, David Straley.

**Ex Officio Members:**

Julie Voeck, proxy for John DiDonato  
Mark Bring, proxy for Chuck MacFarlane  
Margaret Hodnik  
Sandi Tabor

**Others present:**

Dave Archer, NGPRL  
Dr. Tim Faller, NDSU  
Manlu Yu, NDSU  
Dr. Jiacheng Shen, NDSU  
Dr. Igathinathane Cannayen, NDSU  
Cal Thorson, NGPRL  
Barry Coleman, Northern Canola Growers  
Al Christianson, GRE  
Brady Pelton, NDAOGPC  
Carlee McLeod USND  
Danette Welsch, ONEOK  
Mike Fladeland, Department of Commerce  
Sherri Frieze, Department of Commerce  
Justin Dever, Department of Commerce  
Shane Goettle, Odney Advertising  
Cory Fong, Odney Advertising  
Warren Enyart, M-Power, LLC  
Kim Christianson, ND Alliance for Renewable Energy  
Karlene Fine, Industrial Commission

**CALL TO  
ORDER/WELCOME**

Chairman Anderson called the meeting to order at 10:00 a.m. and welcomed Commission members and guests.

**APPROVAL OF MINUTES**

**A motion was made by Day and seconded by Straley to approve the minutes of April 10<sup>th</sup>, 2014. Motion carried unanimously.**

**Growing Oil Seeds for Jet Fuel Production  
Dave Archer**

Mr. Archer discussed different oilseeds that are being considered for commercial and aviation jet fuels to reduce the dependence on foreign fuels. The federal government and its partners hope to support the annual production of 1 billion gallons of drop in aviation biofuels by 2018.  
[Appendix A](#)

**2014 Committee Breakout Sessions**

No minutes were taken during the breakout sessions as each subcommittee had their own discussion groups.

**Committee Reports**

Breakout sessions reconvened with a recap from each subcommittee.  
[Appendix B Numbered items below refers to the spreadsheet of Legislative Priorities.](#)

**Infrastructure subcommittee**

Ness discussed key points:

- # 6 PILT (Payment in lieu of taxes) A pilot program for a period of 10 years for energy corridors.
- NEW - Review and evaluate the IHS study, policies/incentives
- NEW - Develop incentives to expand natural gas delivery systems into communities.
- NEW - Infrastructure grant fund for CNG/LNG agricultural drying purposes.
- #7 – Invite Todd Sando, State Engineer, talk about water projects and plans.
- #9 – moved into #1 and make it an Executive Branch Study
- NEW - Production Tax Credit along with other credits for drill cuttings; legislature language to be put into place and the Health Department to be involved.

**Production Capacity Tax Credit**

Julie Voeck and Dale Niezwaag spoke on behalf of the Wind Committee that had met with the Tax Department a few months ago. They talked about the methodology of new incentives that are being looked at for the upcoming biennium.

The sales tax exemption, the new facilities tax credit and the income tax credits will all be expiring. Percentages have not yet been agreed upon with industry and the tax department. More discussions will take place at the June meeting regarding this.

**Research & Development**

Straley discussed key points:

- # 14 Renewables – \$3 M – continue supporting. Funds not all used up.
- #15 Lignite - \$8 M –would like to up the amount, program successful.
- #16 Oil & Gas – \$10 M – would like to up the up the amount.
- NEW – sales tax, advanced manufacturing
- NEW – capturing flaring
- NEW – CO<sub>2</sub> storage
- NEW – production tax credit for drill cuttings
- NEW – a state funded CDBG infrastructure grant

**Federal Regulatory**

Tabor mentioned that nothing has changed on:

- #17, #18, #19

**IHS Value-Added Marketing Study Update**

**Don Bari & Ed Metzger**

Don Bari and Ed Glatzer were conferenced in via phone line from New York and from San Francisco. They gave updates on the studies to evaluate value-added market opportunities for renewable energy resources (ethanol) and oil and gas (NGLs).

The best potential for ethanol appears to be n-Butanol and Butadiene; for NGLs, ethylene, propylene, butadiene and isobutylene. The IHS team will provide a face-to-face report to the Commission during the June meeting, at which time they've been asked to more directly cover subjects such as the opportunities for the state and recommendations for incentives.

**Future Meetings**

The next meeting will be June 5<sup>th</sup> and 6<sup>th</sup> at the Northern Great Plains Research Laboratory in Mandan, ND.

**ADJOURNMENT**

The Chairman adjourned the meeting at 3:45 p.m. The meeting was adjourned unanimously.

---

Al Anderson	Date
Chairman	

---

Sherri Frieze	Date
Recording Secretary	

#	Topic Area	Action	Cat.	Type	Comments
1	Infrastructure	Develop a new formula to provide adequate funding for local government investment in construction of infrastructure necessary to address significant funding shortfalls for roads, wastewater treatment facilities, water supply facilities, and other needs normally funded by local government entities.	2	Legislation	HB 1358 provides an estimated \$593 million in distributions and transfers to counties, cities, and school districts
2	Infrastructure	Provide oil impact grant funds for regional or local community development and infrastructure planning in the Bakken area.	2	Funding	HB 1358 includes \$240 million in oil impact grant funds
3	Infrastructure	Remove the sunset on the Housing Incentive Fund, expand program funding and consider broadening the application to provide alternate or direct funding source.	1	Legislation	HB 1029 and SB 2014 provide \$35.4 million in HIF funding
4	Infrastructure	Provide funding to the North Dakota Housing Finance Agency for the Down Payment Assistance and Construction Loan Guarantee Programs and provide guarantees to local lenders for incentives to borrowers who have participated in "financial counseling programs."	3	Funding	
5	Infrastructure	Promote the importance of temporary workforce housing.	3	Executive Branch Action	
6	Infrastructure	Promote the long-term benefits and reduced impacts for providing easements on property for energy infrastructure. This effort could include: <ul style="list-style-type: none"> <li>o Encouraging energy companies to focus on the importance of on-going positive landowner relations and ensuring reclamation efforts are satisfactory to the landowner.</li> <li>o Encouraging landowners and energy companies to use the North Dakota Agriculture Department's mediation service to reach mutual agreement on terms of the easement.</li> </ul>	3	Executive Branch Action	HB 1009 includes \$50,000 in additional funding for Agriculture Department's mediation services
7	Infrastructure	Study existing water systems throughout the state and take action to provide expansion of capacity to meet growing community and commercial needs.	2	Study	
8	Infrastructure	Coordinate with the U.S. Corps of Engineers to increase access to Lake Sakakawea for industry and community needs to alleviate pressure on other water sources, reduce local truck traffic and improve road safety.	3	Executive Branch Action	
9	Infrastructure	Maintain a comprehensive long-range forecast for energy production and supply across all sectors, specifically looking at needed infrastructure to support growth.	2	Legislation/ Study	§18 of SB 2014 provides \$150,000 for updates and refinements of employments models related to oil & gas
10	Infrastructure	Monitor the railroad capacity within North Dakota to ensure there is adequate ability to export all commodities to market.	3	Study	
11	Workforce	Increase efforts to educate North Dakota's youth, as early as grades 4-5, about North Dakota's natural resources by developing curriculum to encourage interest in energy careers.	2	Legislation	
12	Workforce	Encourage and enable the energy industry to collaborate with the North Dakota University System, Governor's Workforce Development Council, Job Service North Dakota and other agencies to: <ul style="list-style-type: none"> <li>o Fund enhancements to Job Service North Dakota's systems and data collection processes to provide analytical data related to workforce skills and employment to better identify energy industry needs.</li> <li>o Develop and enhance core curriculum related to high-demand energy industry careers.</li> <li>o Encourage industry interaction with teachers and guidance counselors to grow youth knowledge and interest in energy careers and to better retain youth for high-demand career options.</li> <li>o Provide greater accessibility to career and technical education programs, especially through adequate training facilities.</li> </ul> § Examples of the above include, but are not limited to: <ul style="list-style-type: none"> <li>· science, technology, engineering, and mathematics (STEM) education</li> <li>· original equipment manufacturer (OEM) supported programs</li> <li>· commercial driver's license (CDL) training sites</li> <li>· emergency medical services</li> <li>· technical trades/internships</li> <li>· energy careers</li> </ul>	1	Funding/ Legislation	HB 1358 includes \$120,000 for Job Service North Dakota to improve oil and gas employment data  \$2.05 million is provided for STEM related programs
13	Workforce	Support legislation which recognizes the role distance learning will play in the future of education and improve access to technology for students using distance learning programs	3		

#	Topic Area	Action	Cat.	Type	Comments
14	Research & Development	Allocate a portion of the Resource Trust Fund and set a target funding level for the renewable R&D program of \$3 million to enable planning for the future and to encourage the development of renewable resources, including ideas on how to foster cooperative efforts with traditional fuels.	1	Legislation	SB 2014 includes \$3 million in ongoing funding for the Renewable Research Program
15	Research & Development	Continue to support existing R&D programs which will ensure the development and implementation of new technologies to promote new growth for all energy resources.	3	Continuation	SB 2014 increasing Oil & Gas Research program to \$10 million
16	Research & Development	Coordinate with private industry to identify the steps necessary to create a viable chemical industry related to energy resources. <ul style="list-style-type: none"> <li>o Fund a study to evaluate value-added market opportunities for energy resources.</li> <li>o Increase funding to the oil and gas research program by \$1 million to explore opportunities related to value-added processing of natural gas.</li> </ul>	1	Legislation	SB 2014 includes \$500,000 for a value-added market opportunities study.
17	Regulatory Environment	Encourage federal agencies to recognize environmental issues unique to North Dakota and work with the agencies to develop regulations that make sense for the state and its companies. <ul style="list-style-type: none"> <li>o Establish new venues for state and federal regulatory agencies to collaborate on federal rulemaking efforts in ways that address individual state issues.</li> </ul>	3	Executive Branch Action	EmPower ND Commission will explore methods of collaboration
18	Regulatory Environment	Use the EmPower North Dakota Commission to better understand the economic impact of federal regulatory proposals on North Dakota. <ul style="list-style-type: none"> <li>o Comment on proposed federal regulations with significant potential impact on the state's economy and engage the North Dakota Congressional delegation to actively challenge the implementation of final regulations posing a threat to North Dakota's economy.</li> </ul>	2	Legislation/ Funding	
19	Regulatory Environment	Recognize the additional burdens new energy developments are placing on state regulatory agencies and provide adequate funding and staffing levels for North Dakota Department of	2	Funding	Support agency requests for additional resources: <a href="#">Health: 8 FTE - \$2 million (SB 2004)</a> <a href="#">Mineral Resources: 23 FTE - \$4.2 million (SB 2014)</a> <a href="#">PSC: 2 repurposed FTE (HB 1008)</a> <a href="#">Water Commission: @ FTE - \$308,456 (HB 1020)</a>

# Oilseeds for Jet Fuel

David Archer  
USDA-Agricultural Research Service  
Northern Great Plains Research Laboratory  
Mandan, ND

2

A **\$1/barrel** increase in the price of oil costs the Navy an **extra \$31 million**

*-Secretary Ray Mabus*



# Navy Fuel Goal

Memorandum of Understanding between the Department of the Navy and the Department of Energy and the Department of Agriculture – March 30, 2011

“Accordingly, the DON has adopted a goal of, by 2020, replacing **one-half** of conventional petroleum based fuel use with domestically sustainable fuel alternatives.”

The federal government and its partners hope to support the annual production of **1 billion gallons** of drop in aviation biofuel by 2018.

# Farm to Fly 2.0



## NEWS RELEASE

United States Department of Agriculture • Office of Communications • 1400 Independence Avenue, SW  
Washington, DC 20250-1300 • Voice: (202) 720-4623 • Email: [oc.news@usda.gov](mailto:oc.news@usda.gov) • Web: <http://www.usda.gov>

WASHINGTON, April 15, 2013 - Agriculture Secretary Tom Vilsack announced today that USDA is extending for five years its agreement to work with the Federal Aviation Administration (FAA) and other partners to help develop a viable biofuel for the aviation industry. The Secretary signed the agreement with Transportation Secretary Ray LaHood at the Advanced Biofuels Summit at Gaylord National Harbor in Maryland.

"By continuing to work together to produce American made 'drop-in' aviation fuels from renewable feedstocks, we will create jobs and economic opportunity in rural America, lessen America's reliance on foreign oil and develop a thriving biofuels industry that will benefit commercial and military enterprises," Agriculture Secretary Vilsack said.

# Fuel Requirements

---

- ◉ Drop-in fuels
- ◉ Cost-competitive
- ◉ Not compete with food
- ◉ Environmentally beneficial

# Economic Viability

- Renewable fuel needs to be cost-competitive
- Must be profitable at each stage of the supply chain

## Biofuel Supply Chain



Feedstock  
Development



Feedstock  
Production



Feedstock  
Logistics



Biofuels  
Conversion

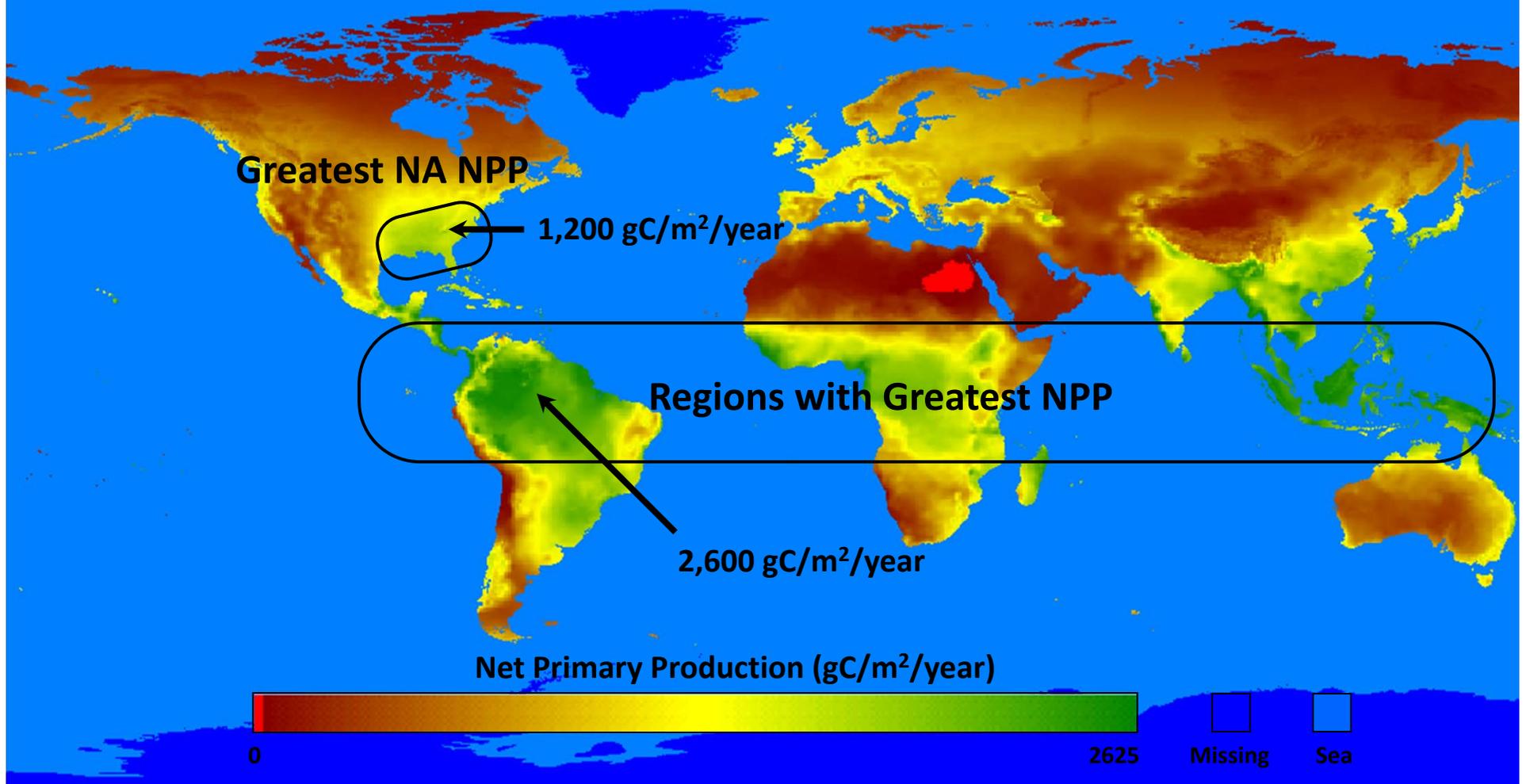


Fuel Testing  
& Approval



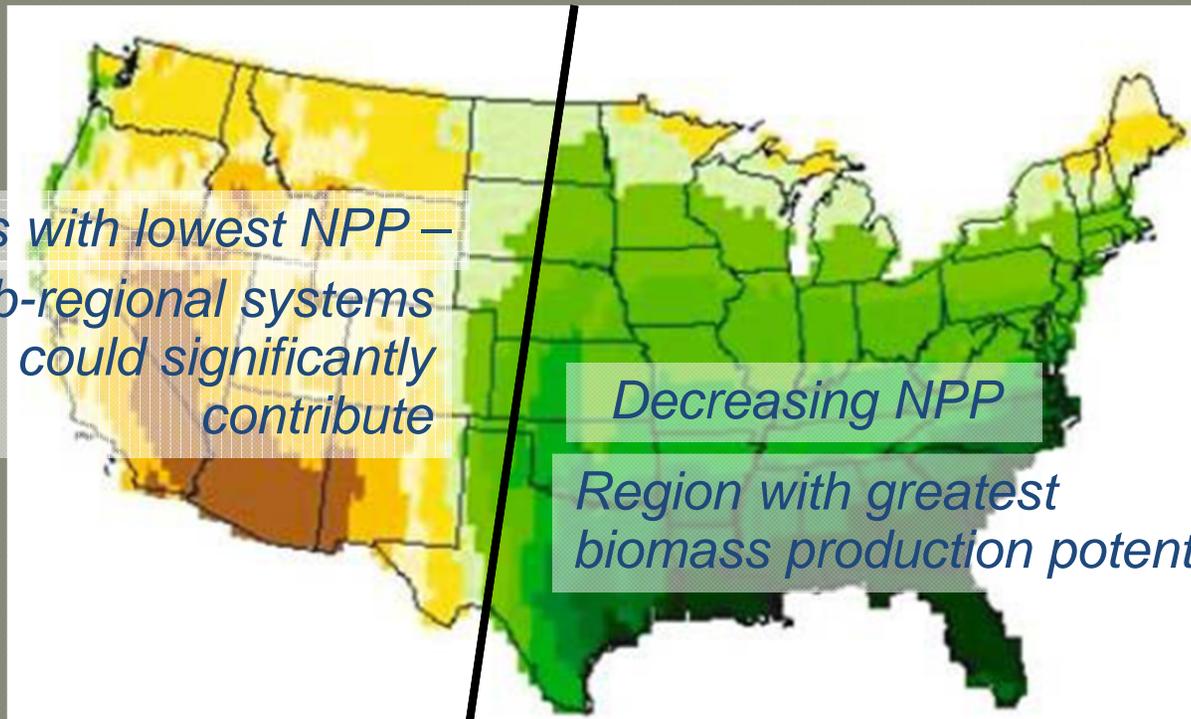
Large Scale  
Deployment

# Biophysical Realities and Implications for World Biofuels Production



# Implications for United States Biofuels Production

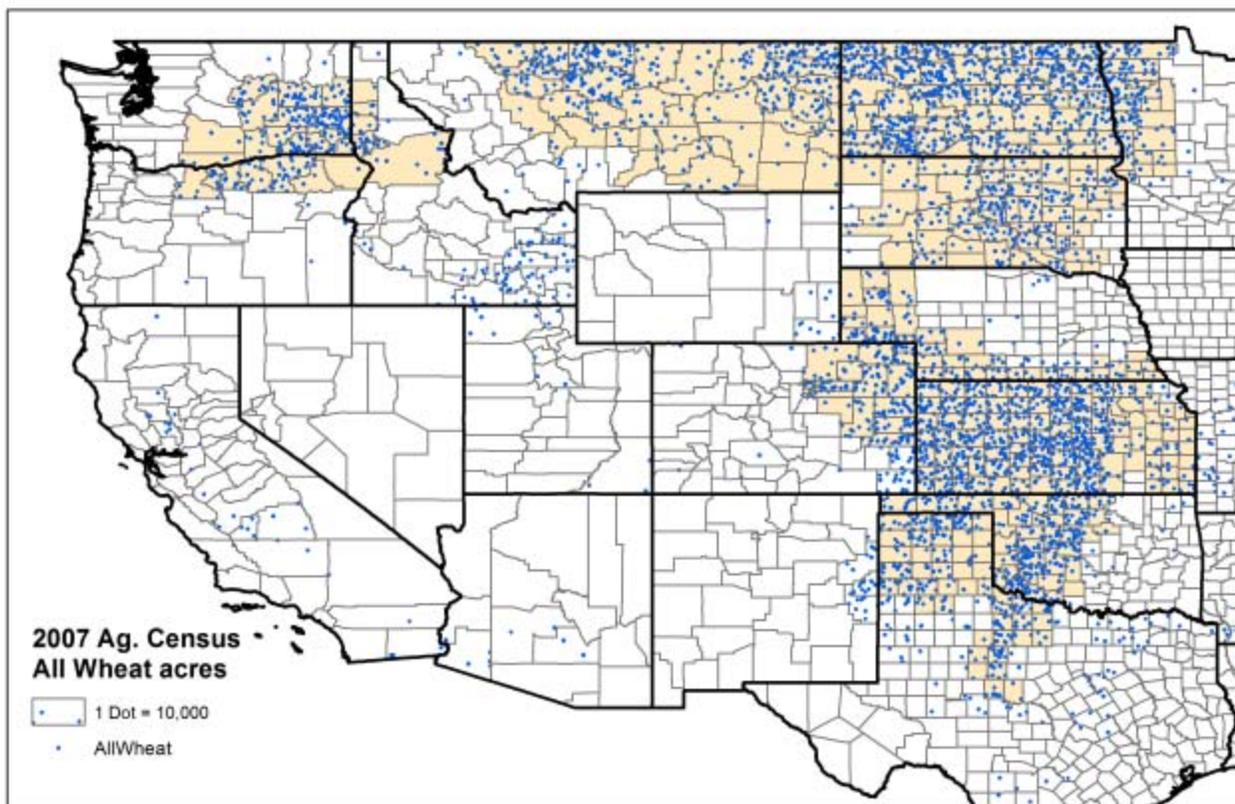
*Regions with lowest NPP –  
Sub-regional systems  
could significantly  
contribute*



**Net Primary Production (g Carbon/m<sup>2</sup>/yr)**

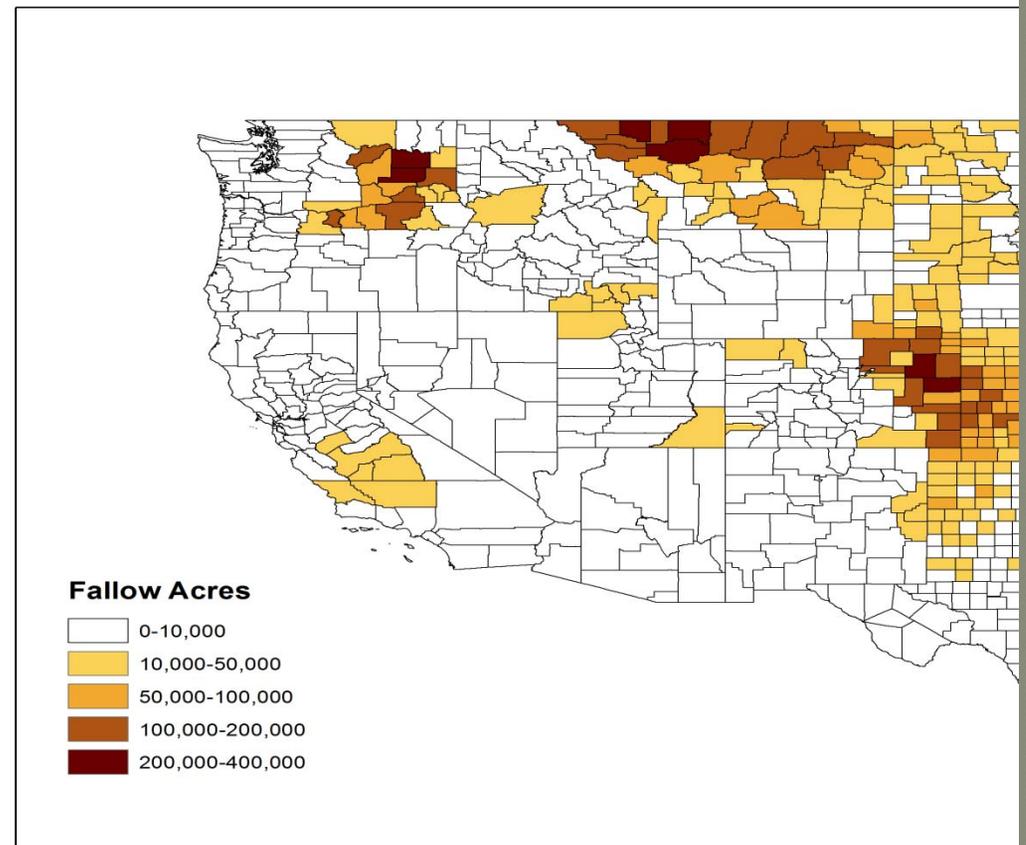


# Western Wheat Belt



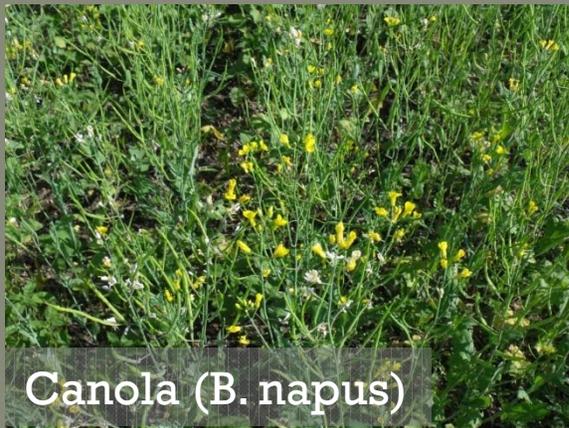
# More Efficient Land Use

- Fallow
- Rotational benefits
- Double-crop or Relay-crop



# Oilseeds

## ○ Brassicas (mustard family)



Canola (*B. napus*)



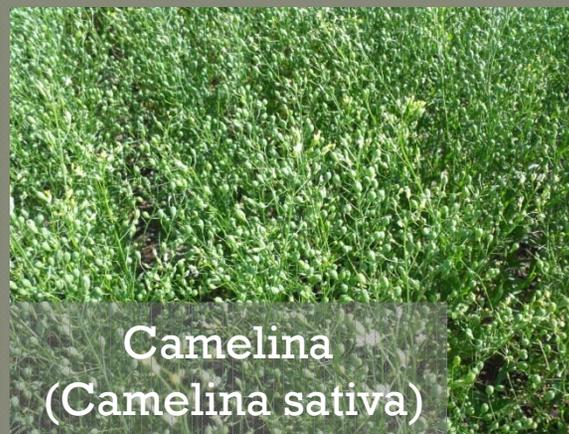
Brown mustard  
(*B. juncea*)



Ethiopian mustard  
(*B. carinata*)



White mustard  
(*Sinapis alba*)



Camelina  
(*Camelina sativa*)

# Hydrotreated Renewable Jet Fuel

- Drop-in fuel (ASTM certified)

- Reduce blend limit concerns
- Higher processing costs



- End-products

- Renewable jet fuel
- Renewable diesel
- Naptha

# Meal Co-Product

---

- Animal feed
  - Good protein content
  - Some have high omega 3
    - Eggs
    - Milk
    - Meat
- Human food - condiments
- Soil applied - biofumigant

# Project Overview

- Multiple funding sources:
  - USDA-ARS
  - US Navy Office of Naval Research
  - USDA National Institute of Food and Agriculture
- Includes University, Private Industry, and Government partners
  - Kansas State University, Iowa State University, Michigan Technological University, University of Idaho, Cornell University, KeyGene, Honeywell UOP, AeCAP, Agricultural Technology Innovation Partnership, USDA Office of the Chief Economist, USDA National Agricultural Library, USDA NRCS
  - Additional collaborators: NDSU, U of TN, USDOT Volpe Center

# Project Overview

- Includes research from feedstock development through biofuels conversion

## Biofuel Supply Chain



Feedstock Development



Feedstock Production



Feedstock Logistics



Biofuels Conversion



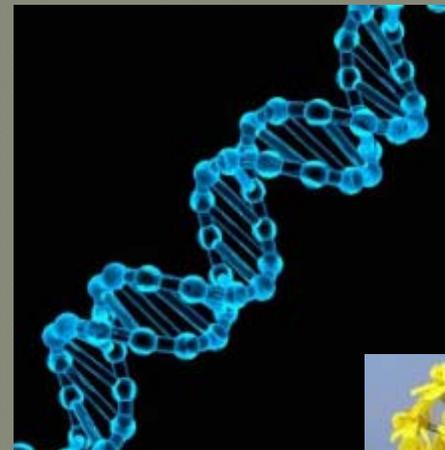
Fuel Testing & Approval



Large Scale Deployment

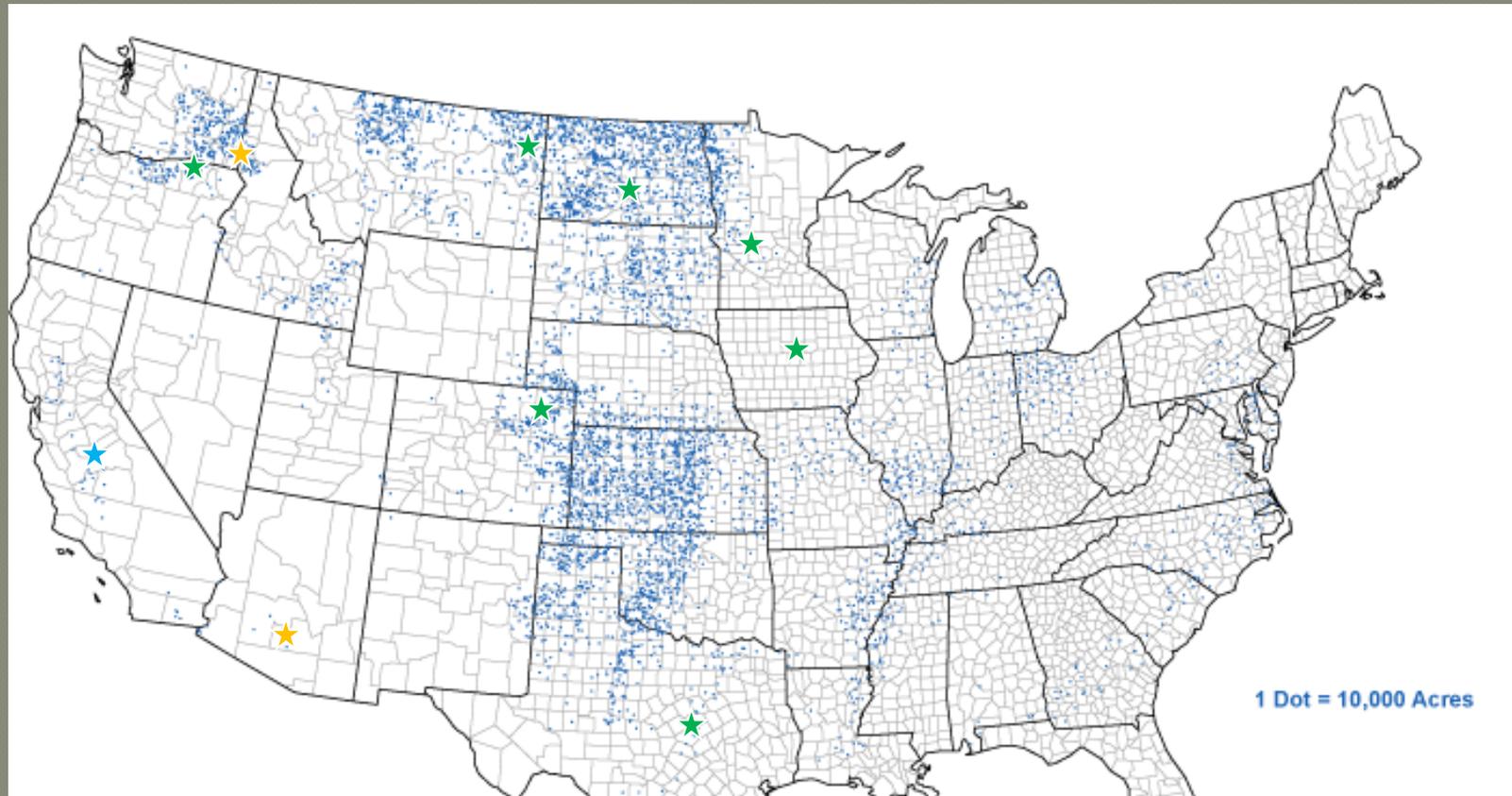
# Genomics

- Genetic diversity analysis ~900 lines
- Re-sequencing 16 lines
- Identify genetic markers associated with traits of interest
  - Yield
  - Disease and pest resistance
  - Lodging
  - Seedling emergence
  - Maturity
  - Winter hardiness
  - Effective use of water
  - Seed oil content
  - Oil composition



# Oilseed Production

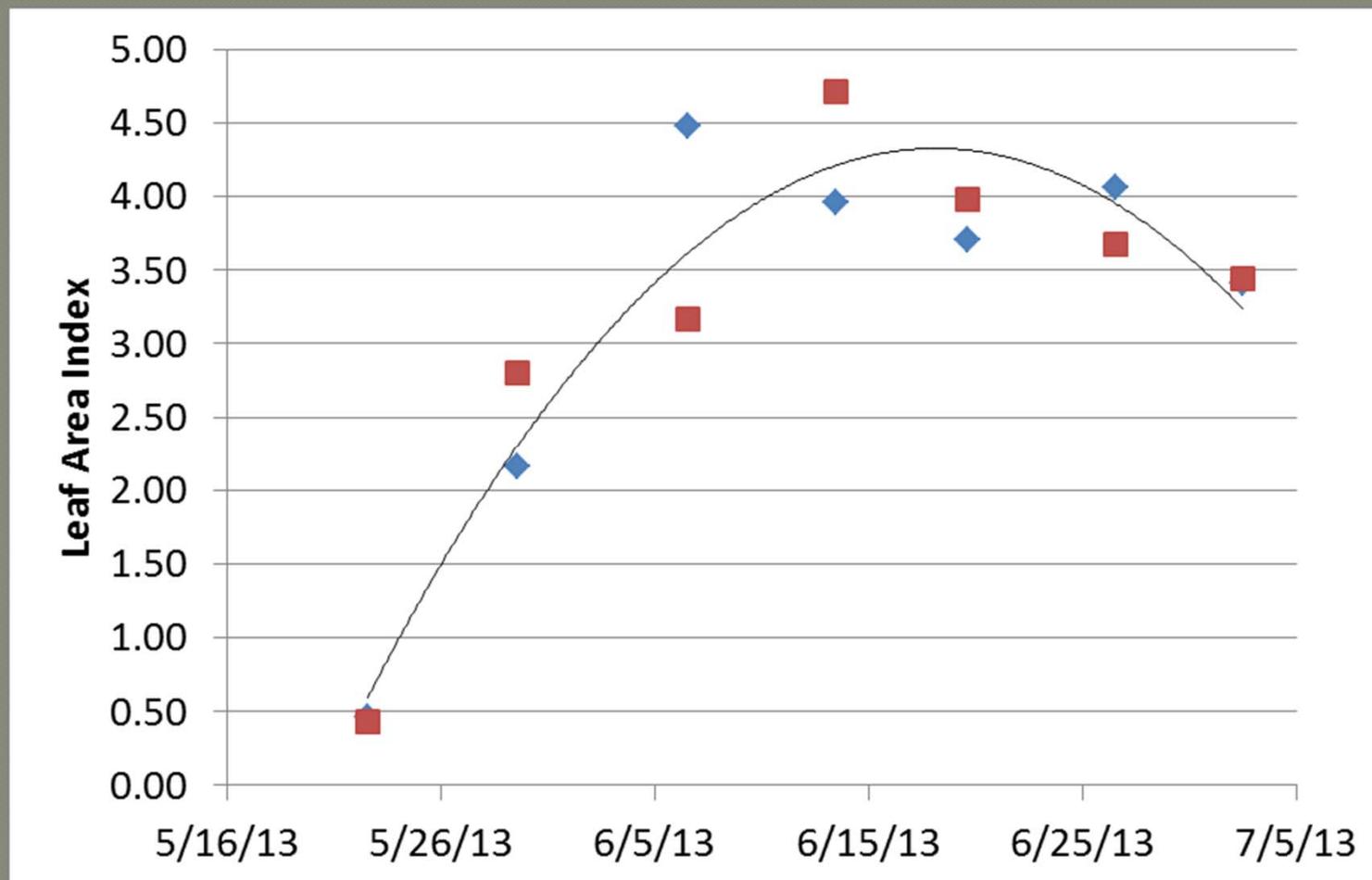
- Oilseed multi-species field trials



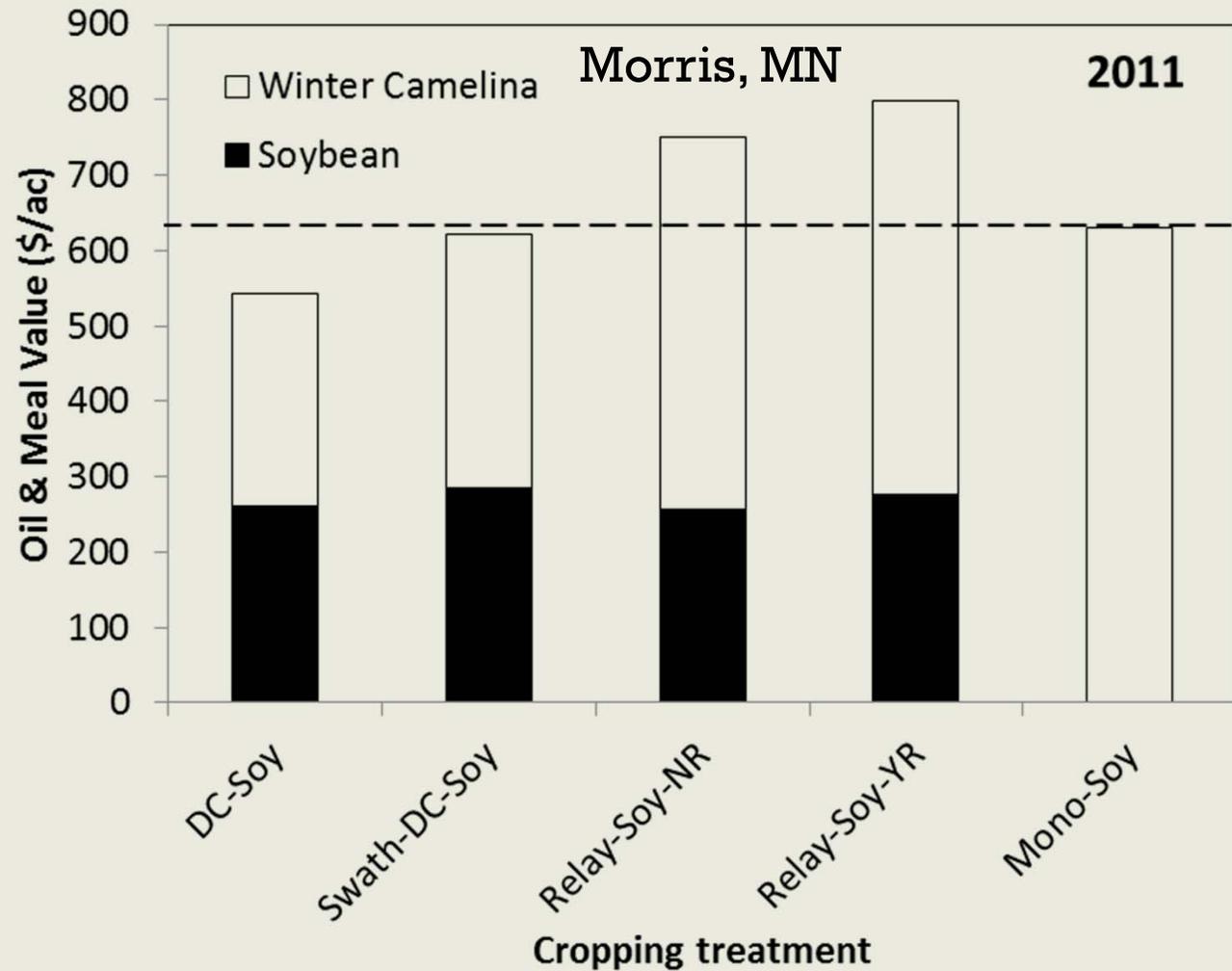
# Crop Measurements



# Crop Measurements



# Direct Field Results



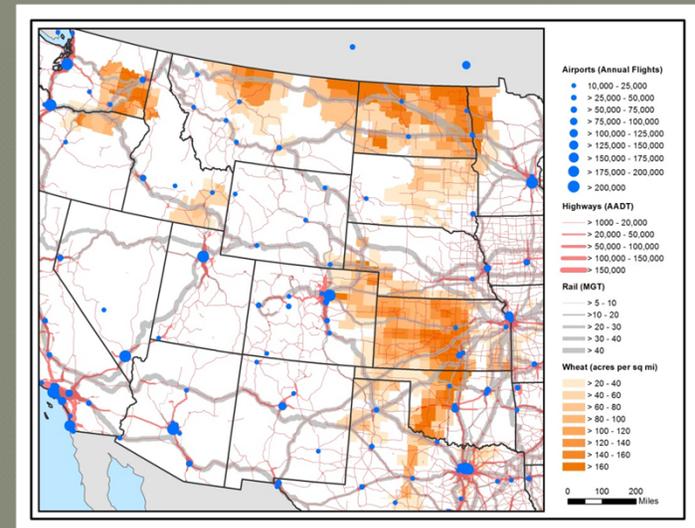
# Key questions

---

- Are they economically viable for the farmer to produce?
  - At a price low enough for industry to be viable?
- Impacts on natural resources and environment
- Long-term effects on agricultural productivity and economic viability

# Oilseed Economics and Sustainability

- Oilseed production
  - Farmer adoption
  - Climate, soil, and market influences
- Feedstock logistics
  - Transportation costs
  - Contracting and supply chain interactions
- Biofuels conversion
  - Fuel yield
  - Byproducts



DOT Volpe Center

# Will Farmers Grow these Crops?

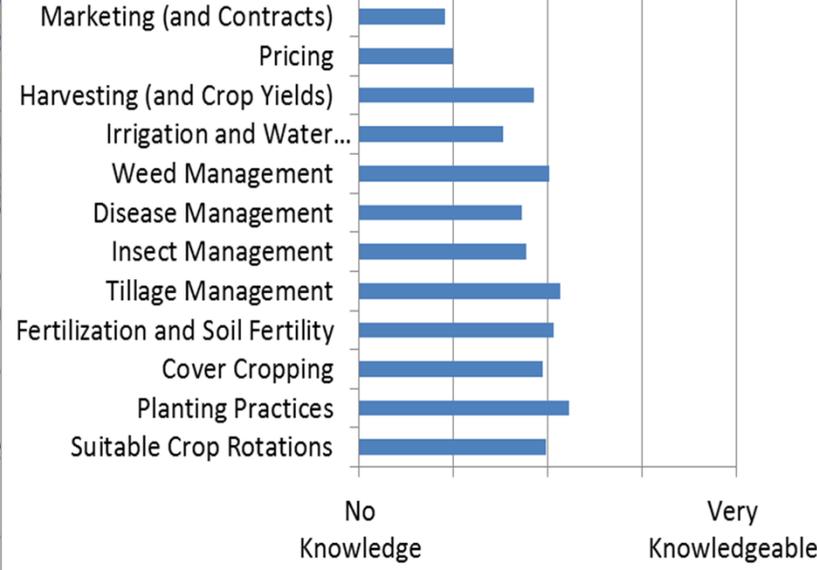
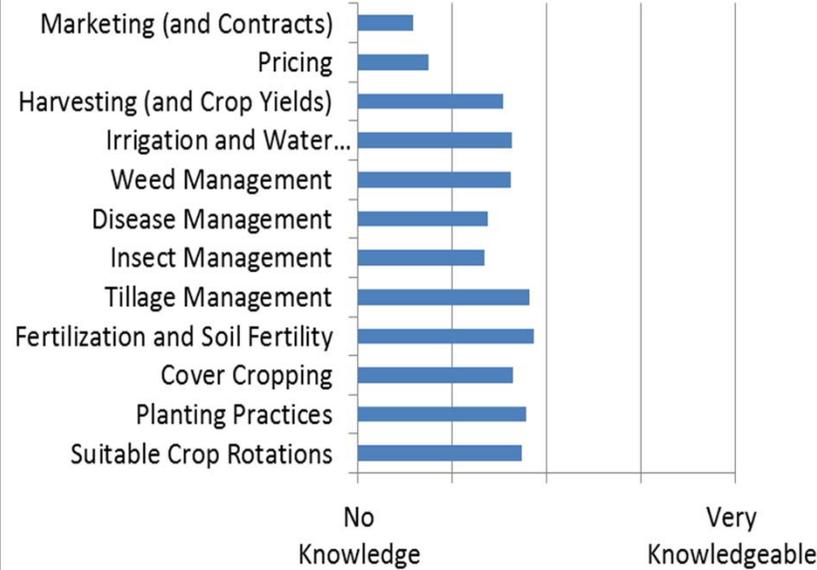
- Crop characteristics
  - Shatter resistance
  - Pest tolerance/resistance
  - Winter hardiness
  - Extended direct combine window
- Market attributes
  - 'Act-of-God' clause
  - Contract length
  - Cost-share
  - Crop insurance availability

## Value of an 'Act of God' Clause

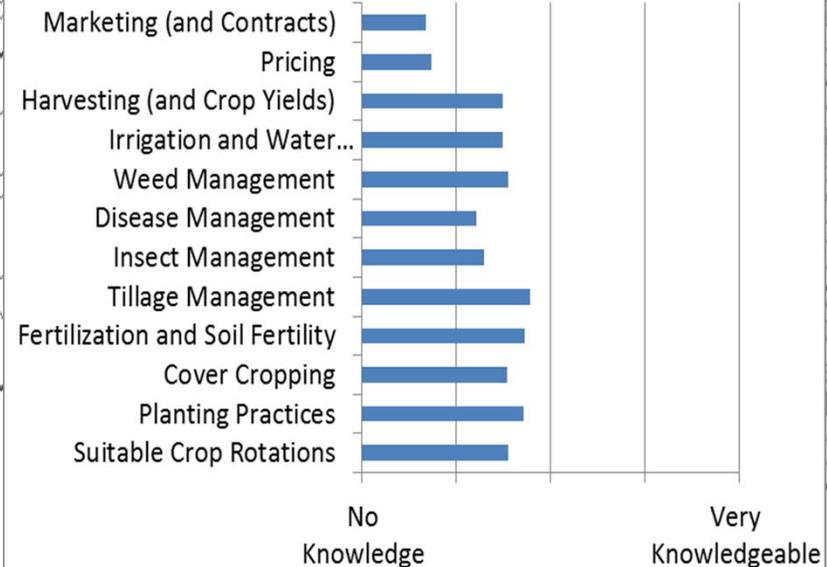
Region	Value (\$/ac)
Pacific Northwest	\$2.76
Northern Plains	\$14.54
Southern Plains	\$8.46

Kansas State University and Iowa State University

# Information Needs



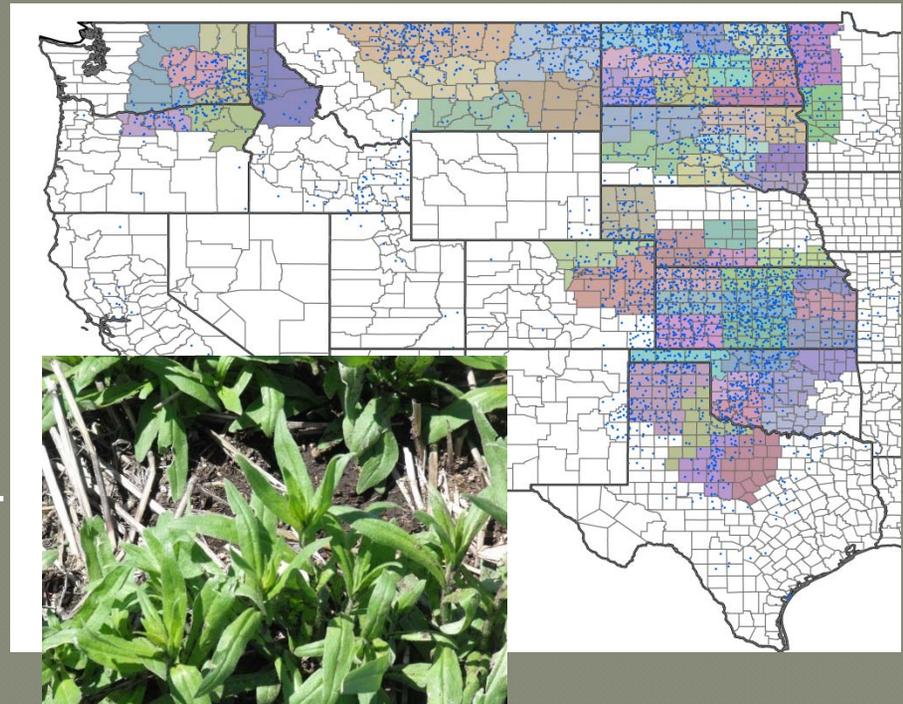
**Ag. Information Provider Question:**  
Please indicate the level of knowledge you have with the following topics related to the oilseed crop (other than soybean or sunflower) you have the most experience with.



# Spatial Oilseed Supply Analysis

- Conduct spatial analysis of oilseed supply as related to adoption and break-even prices

- Pilot analysis – county in each wheat belt production region
- Scale-up analysis to each wheat belt region



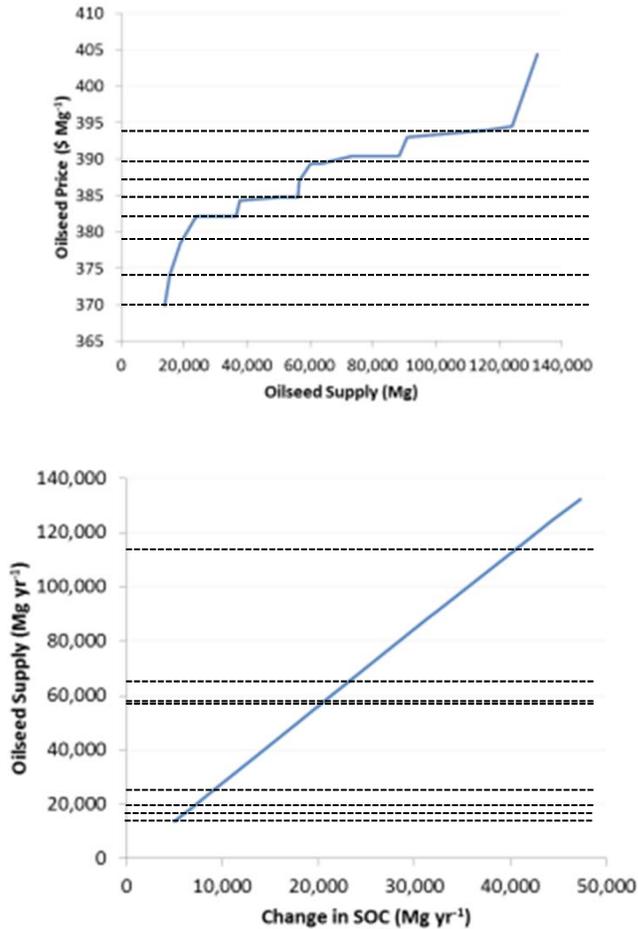
# Modeling approach

- Simulate crop yields, soils and water impacts
  - For each soil
  - Current management
  - Oilseed management alternatives

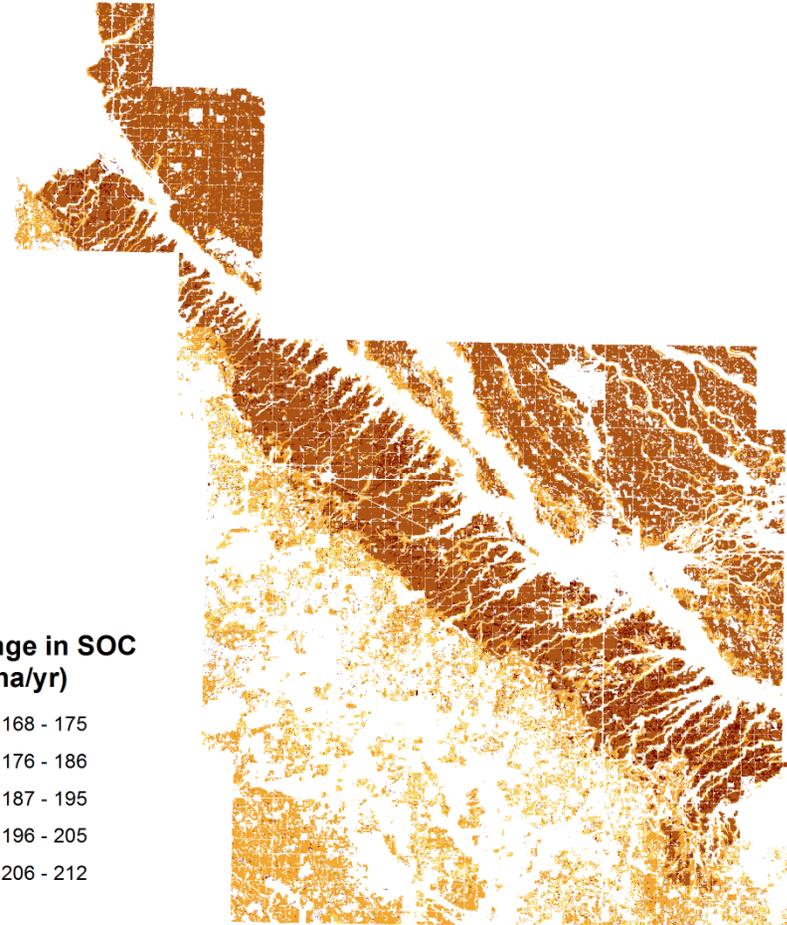
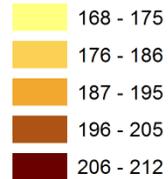


ALMANAC and EPIC models ARS Temple, TX  
and Texas A&M University

# Decision Tool Concept



Change in SOC  
(kg/ha/yr)



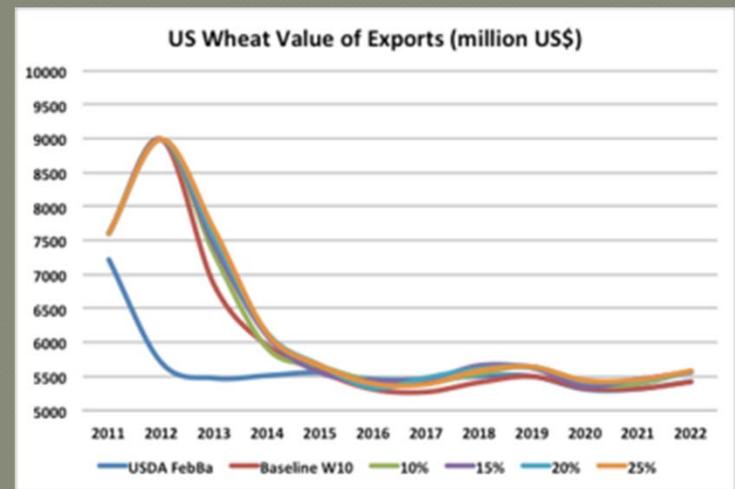
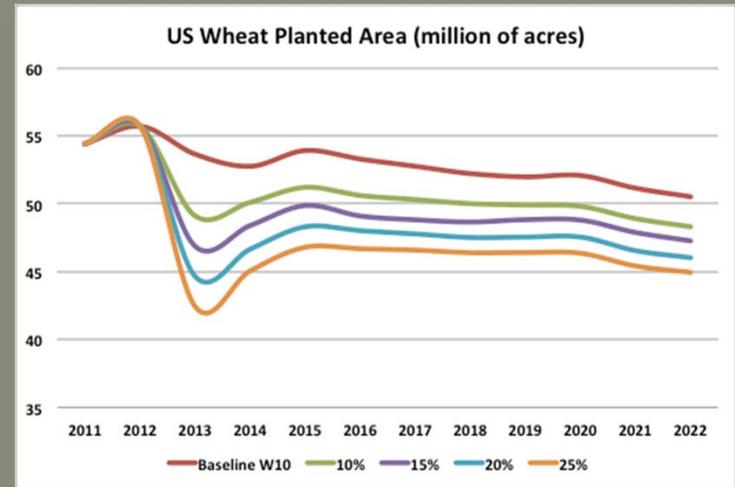
Oilseed Price	\$394/ Mg
Oilseed Supply	115,847 Mg
Change in SOC	41,275 Mg

# Regional and National Economic Assessment

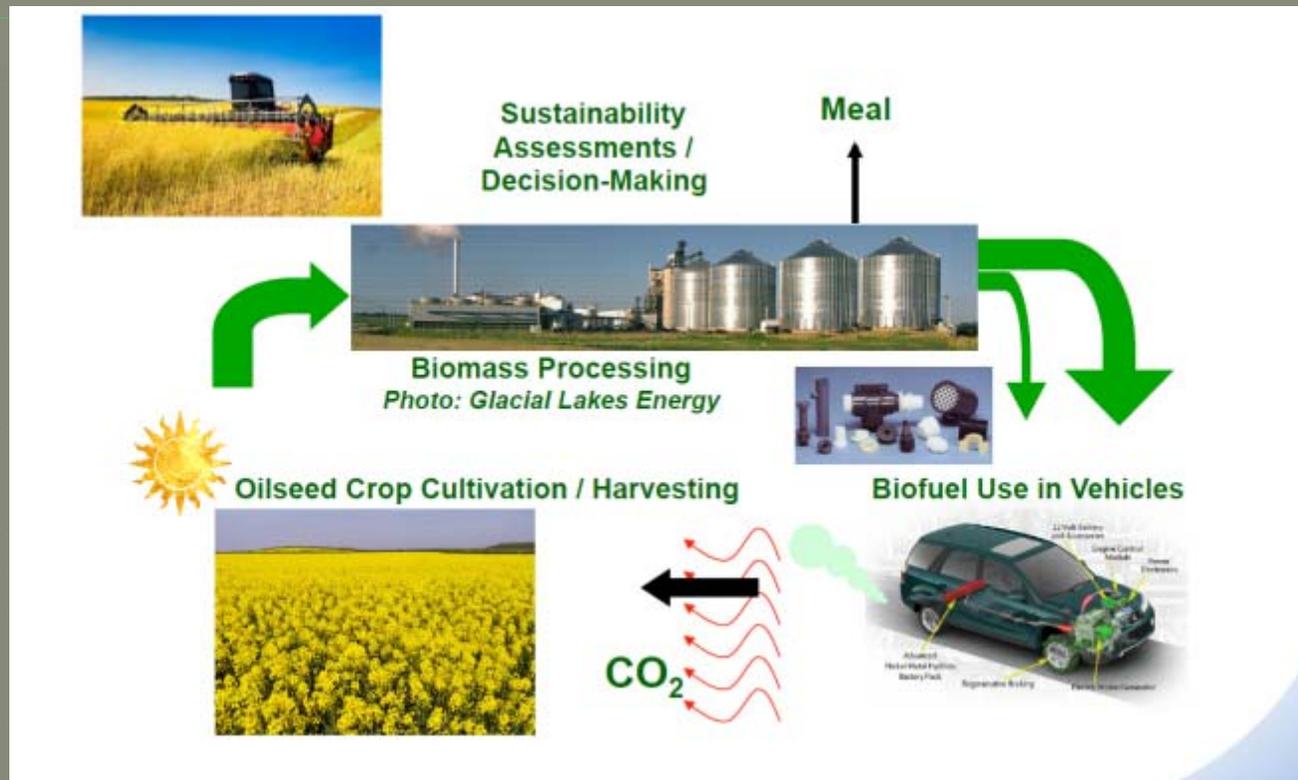
- Linkages of production alternatives to large-scale models (e.g. POLYSYS)

- Crop price impacts
- Regional, national, and global land-use impacts

USDA Office of the Chief Economist  
and University of Tennessee



# Life Cycle Assessment



- Initial analysis shows
  - 80% reduction in greenhouse gas emissions for camelina
  - ~50% reduction in greenhouse gas emissions for industrial rapeseed

# Summary

---

- Promising jet fuel opportunities from wheat belt oilseeds
  - Expanded ag markets, job growth, environmental benefits
- Ongoing efforts along the supply chain
  - Feedstock Development -> Fuel Conversion
- Research benefits beyond jet fuel
  - Crop development
  - Economic and Environmental assessment tools