

# Securing Energy Through Strategic Partnerships

USDA-ARS Planning Workshop  
Biomass Research Centers

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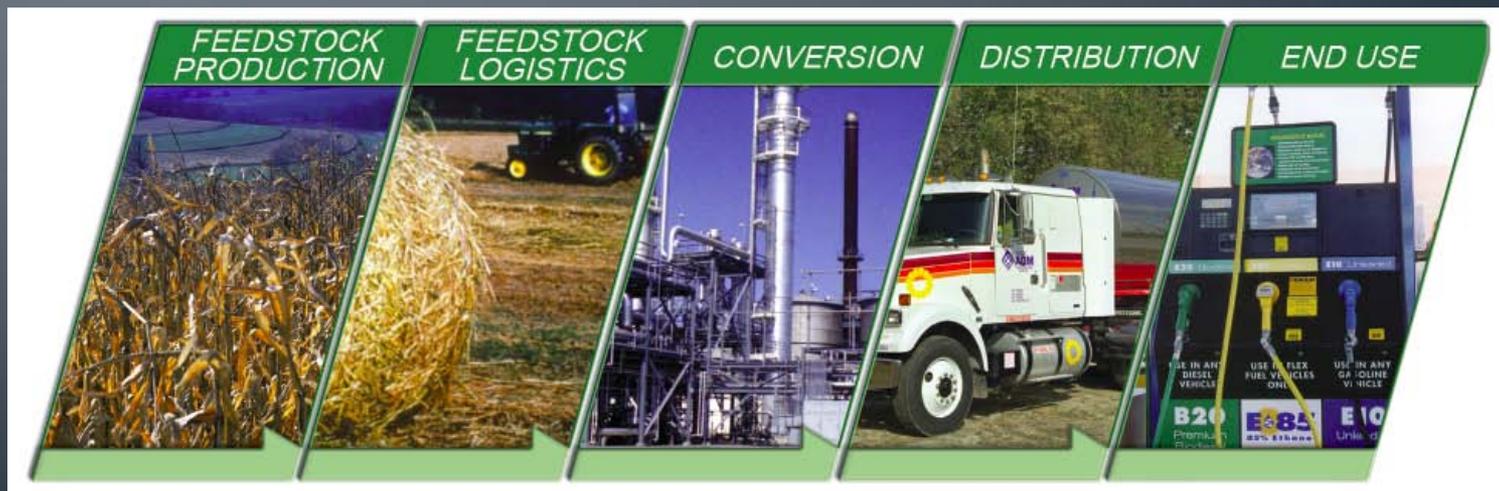
# Growing America's Fuels



- White House - January 2010
- Matching supply chain with agency leadership
  - Discovery Science - DOE Office of Science
  - Feedstock Development - USDA REE and FS
  - Feedstock Production Systems - USDA REE and FS
  - Pilot Facilities - DOE EERE and USDA REE & FS
  - Full Scale – USDA RD and FS and DOE
  - Regulatory Compliance – EPA and USDA
  - Sustainability – EPA and USDA
  - Outreach and Technical Assistance – USDA and CES
  - Workforce Development – USDA and Universities

# Growing America's Fuels

- USDA Regional Feedstock Centers
  - Plan and develop regional supply chains that link feedstock development, production, logistics, conversion, co-product production, and distribution
  - Coordinate with DOE through the DOE Regional Feedstock Partnerships



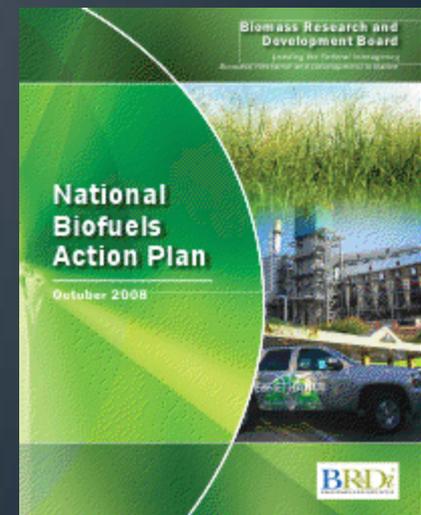
# Growing America's Fuels

- Coordination
- Partnerships
- Collaborations
- Teamwork
- Relationships
- Synergy



# Research Needs For Cellulosic Biofuels

- Biomass R&D Board 2008 Action Plan
  - Sustainability
  - Feedstock Production
  - Feedstock Logistics
  - Conversion Science and Technology
  - (Product) Distribution Infrastructure
  - Blending
  - Environmental Health and Safety



# Sustainability



**“The Crime of the Century”**, taken June 1910 near Newell SD by A.C. Dillman, USDA

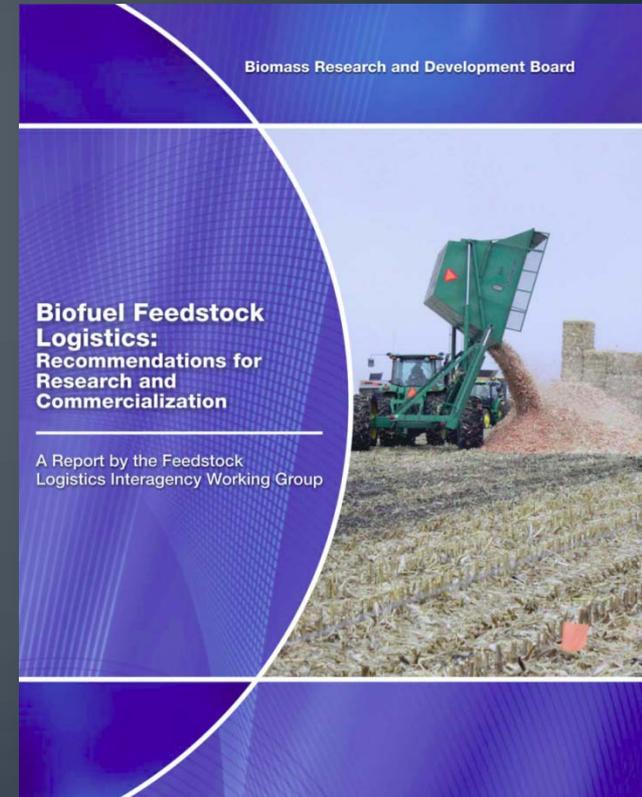
# Feedstock Production - Principles

- Feedstocks Are Local (Bruce Dale, Michigan State Univ.)
  - Low density
  - Widely distributed
  - Have relatively low economic value
- Lignocellulosic feedstocks are diverse
  - Species
  - Phenology
  - Environments
  - Deterioration
  - Water
  - Harvest and storage losses



# Logistics

- BiR&D Board – Logistics Working Group
  - Handle 180 million tons by 2022
  - Current technologies too costly
- Recommendations
  - Densification and Preprocessing
  - Dealing with high moisture biomass
  - High throughput equipment
  - Maximize uniformity and consistency
  - Impacts on transportation system

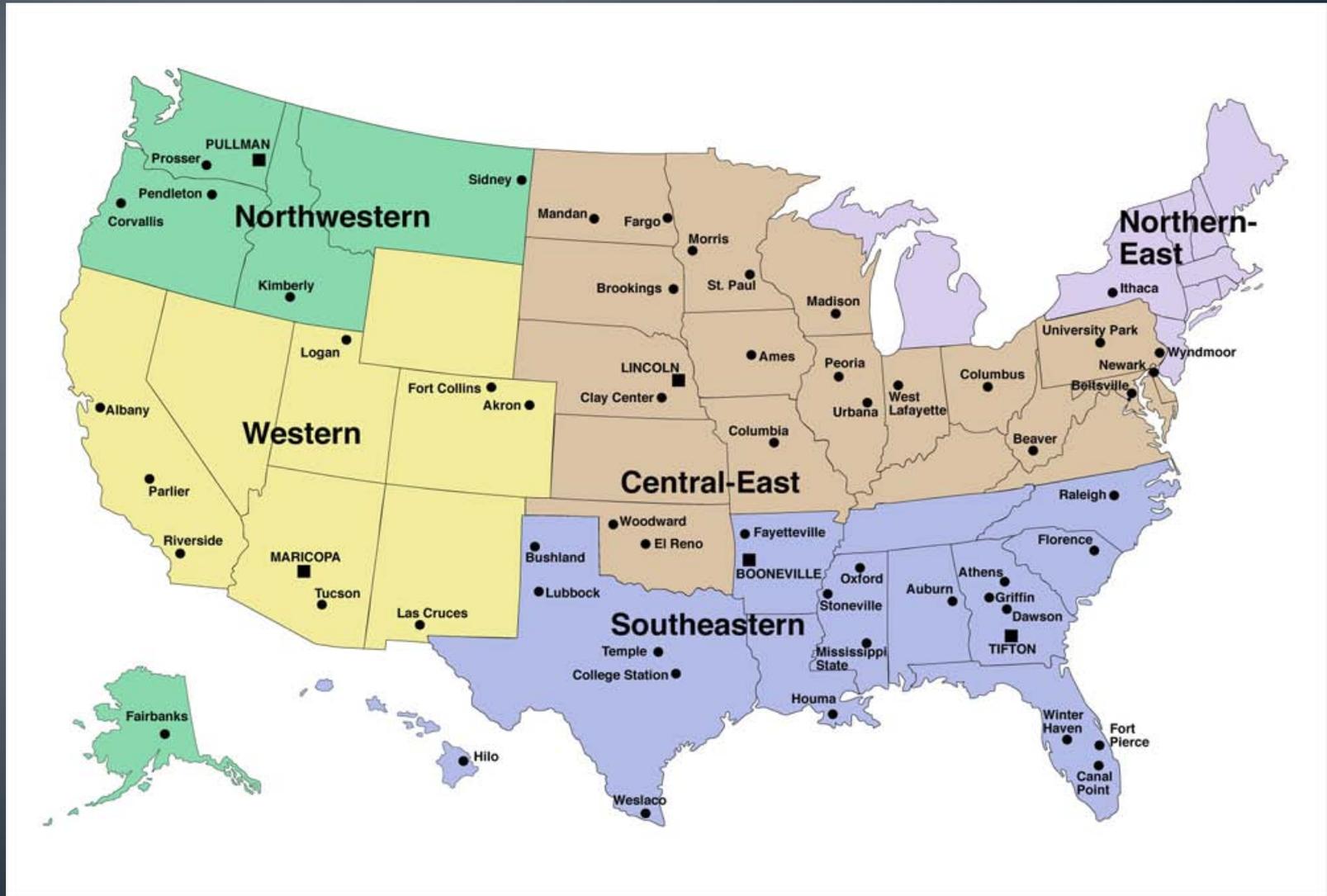


# Efforts Underway for Coordination and Networking

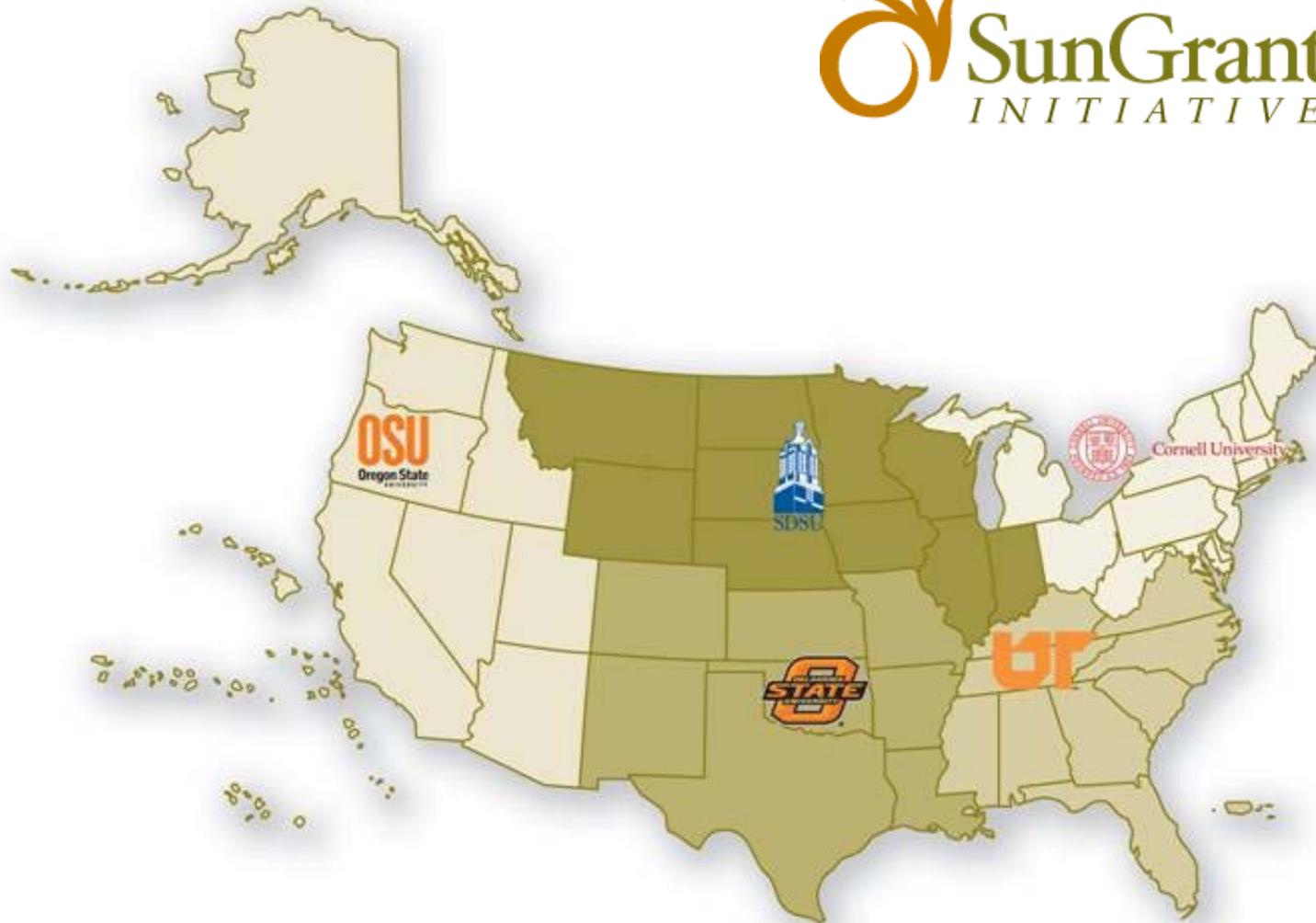
- USDA-ARS Regional Biomass Centers
  - Growing America's Fuels
- Sun Grant Initiative
- DOE SGI Regional Feedstock Partnership



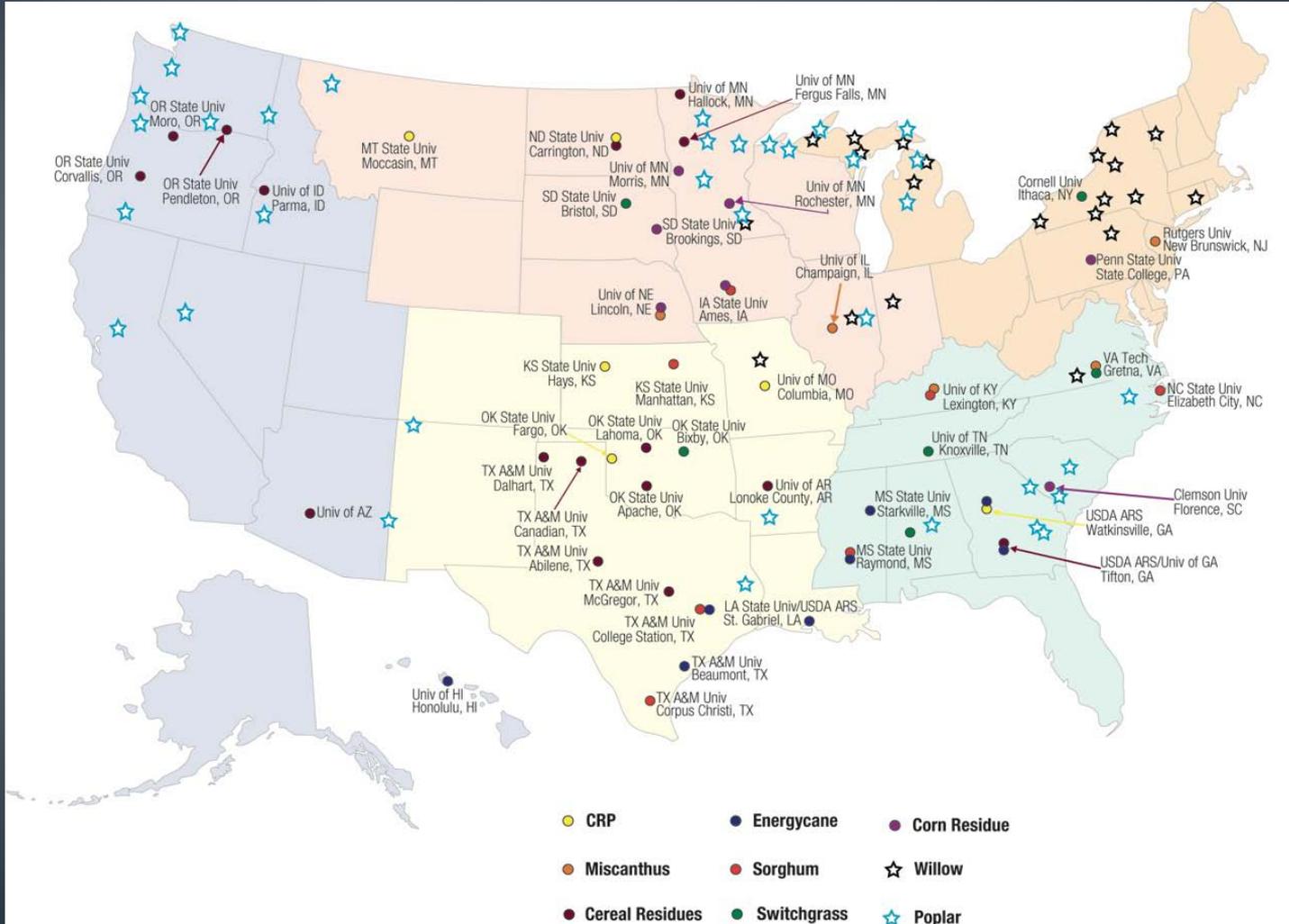
# USDA-ARS Biomass Research Centers



# Sun Grant Regions and Centers



# DOE Regional Feedstock Partnership



# Competitive Federal Efforts

- USDA- NIFA-AFRI CAP Grants
- Biomass R&D Initiative



# Public – Private Partnerships

- BP – UC Berkeley – U of Illinois



- DuPont - Danisco – U of Tennessee



- ConocoPhillips – Iowa State



- Chevron – Texas A&M



# Public – Private Partnerships

- Ceres – South Dakota State Univ.
- Texas A&M
- Samuel Roberts Nobel Foundation



- Mendel - University of Illinois
- Purdue Univ.



# Public – Private Partnerships

- Farm to Fly
- Sustainable Aviation Fuels Northwest
- Great Green Fleet
- Boeing
- ATA
- Hawaiian Airlines
- SeaTac, PDX, GEG
- Air Transport Association
- U.S. Navy
- USDA
- Washington State Univ
- Oregon State Univ
- Univ of Hawaii
- Sun Grant Initiative



# Good Collaborations

- Paperwork and Agreements
  - NOT
- Mutually Understood Goals
- Mutual Commitment Towards the Goals
- Mutual Respect Among the Parties
- Trust and Communication
- Commitment to Address Issues That Arise
- Persistence
- Synergy . . . Symbiotic Relationships

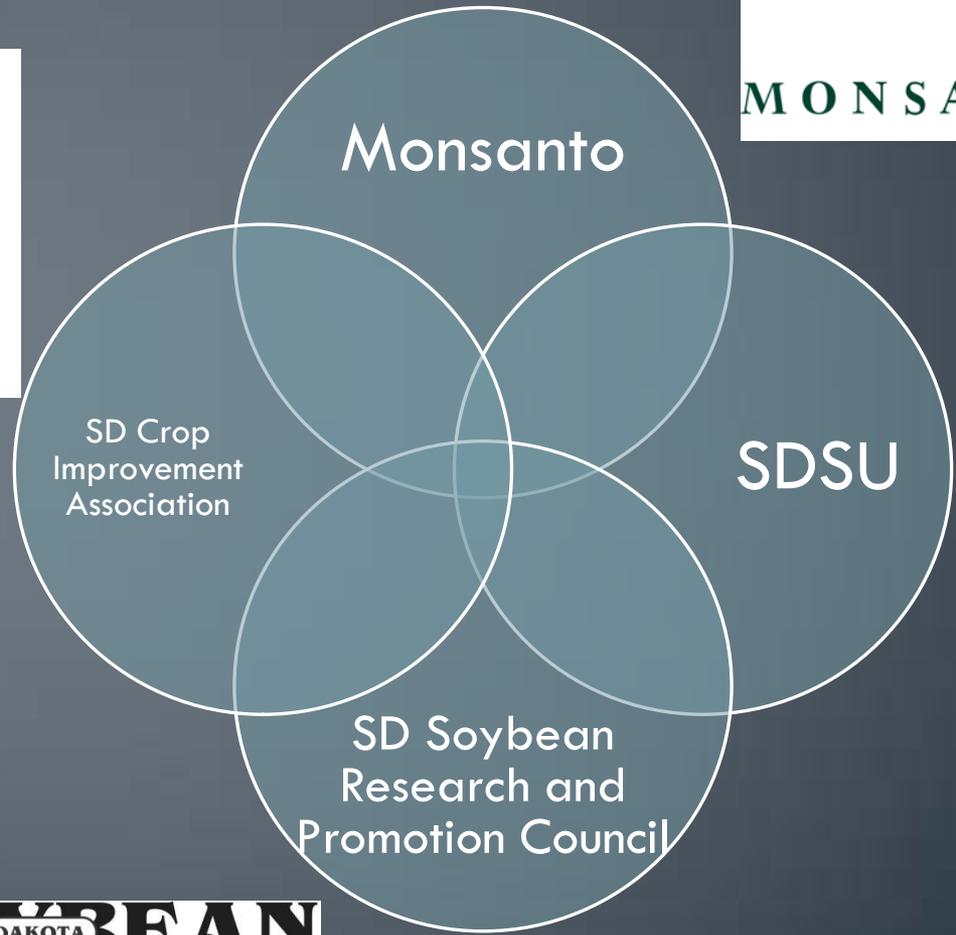
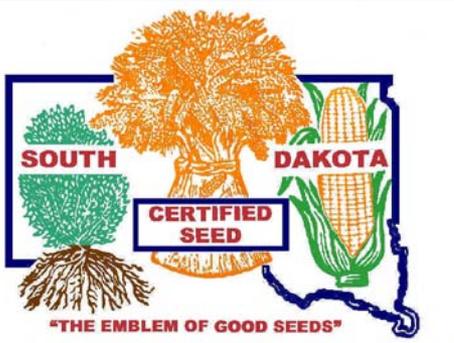


# Good Collaborations

- Relationships



# Building Good Collaborations



# Building Good Collaborations

- Relationships
- Maintain Commitment to Stakeholders
- Address IP and Commercialization in Good Faith
- Inclusion of all parties
  - Get on the same page
- Transparency



# Building Critical Collaborations

- Today is NOT a beginning
- Today IS a next pivotal step
- SDSU and SGI Leadership
  - Thank you for the opportunity to participate
  - Welcome further collaborations with USDA ARS Leaders and Scientists
  - Regular communication
  - With DOE, industry, stakeholders, and states building a national team to meet our mutual goals



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