



USDA Biomass Research Center – Overview and the Southeast Region

Partnership Workshop
Tifton, Georgia
August 11, 2011

Jeffrey J. Steiner, National Program Leader
Biomass Production Systems
USDA Agricultural Research Service



Required Investment to Achieve RFS-2 Biofuel Goals



The first 15 billion gallons:

- *Corn grain ethanol – nearly achieved*
- *About 40% of U.S. corn crop*

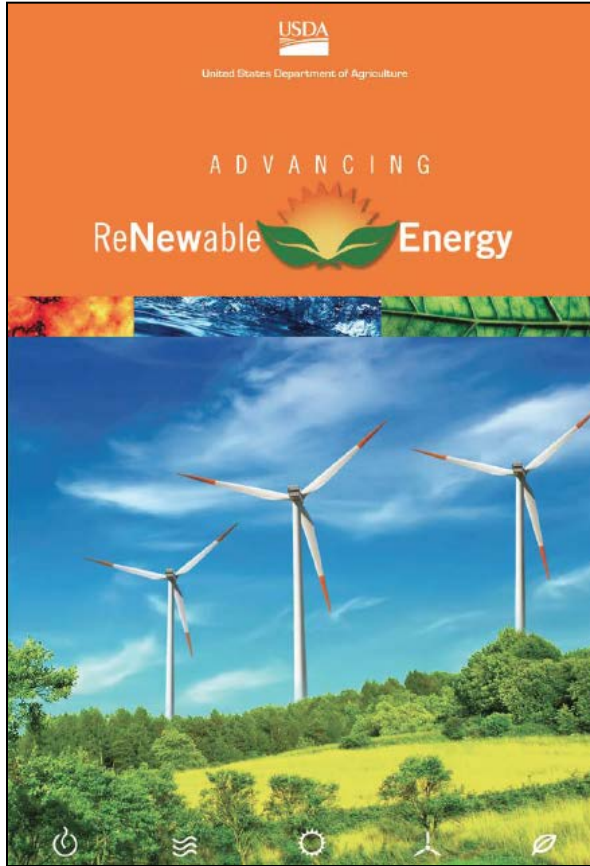
The next 21 billion gallons:

- *29 million acres*
- *Represents 0.2-12% of regional crop and pastureland production areas*
- *527 new advanced bio-refineries that cost \$168-billion*

Thousands of funded projects have been funded, but there has been little effective integration of these efforts across government agencies and with no explicit plan for achieving targets.

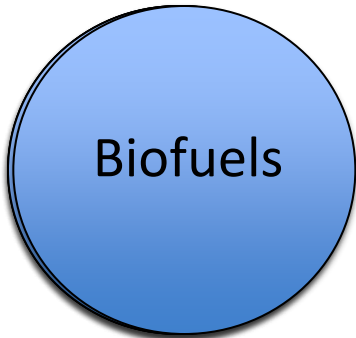
*Growing America's Fuels –
An Innovation Approach to Achieving President's Biofuel Target
Unpublished Briefing Paper: November 23, 2009*

USDA Promotion of Bioenergy Production and Use



- *Research and education*
- *Feedstock development and production*
- *Feedstock conversion and commercialization*
- *Renewable energy production*
- *Energy efficiency and conservation*

Greater Potential Benefits if Efforts are Coordinated



It starts with the end in mind

Supply Chain Systems Approach



Feedstock Development



Feedstock Production



Feedstock Logistics



Biofuels Conversion



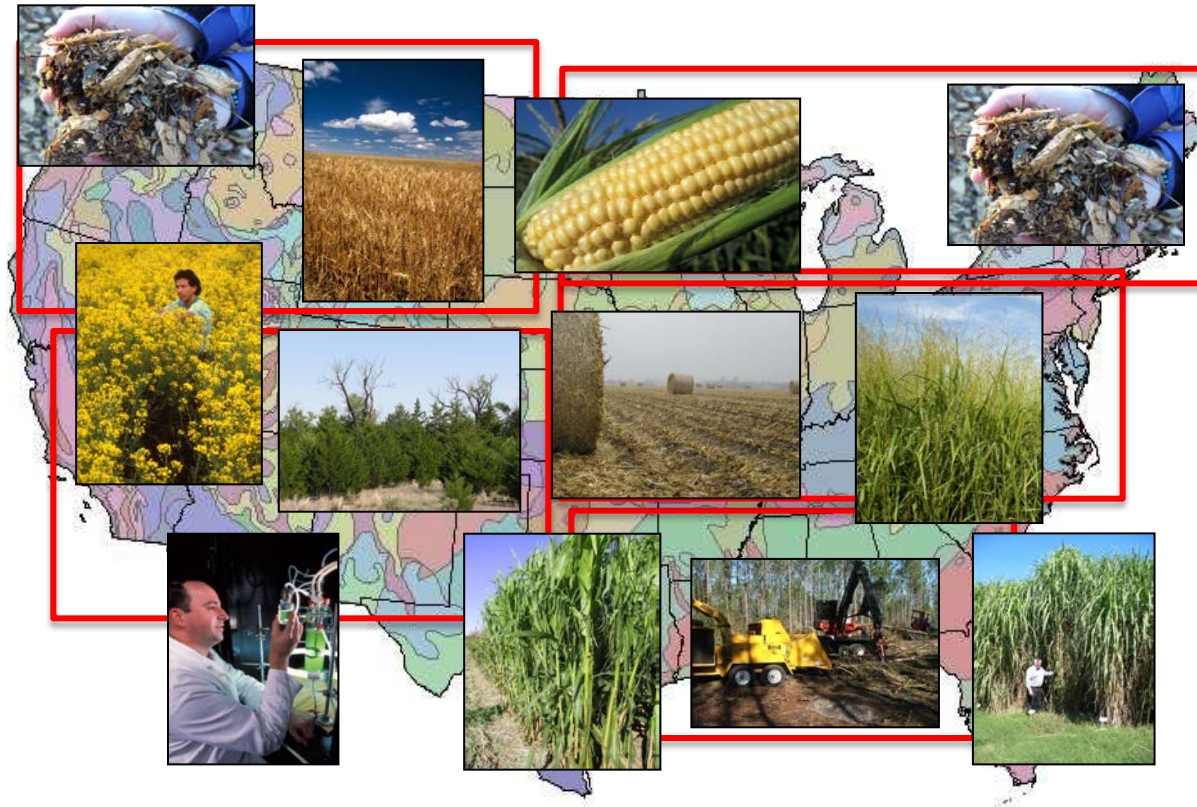
Fuel Testing & Approval



Large Scale Deployment

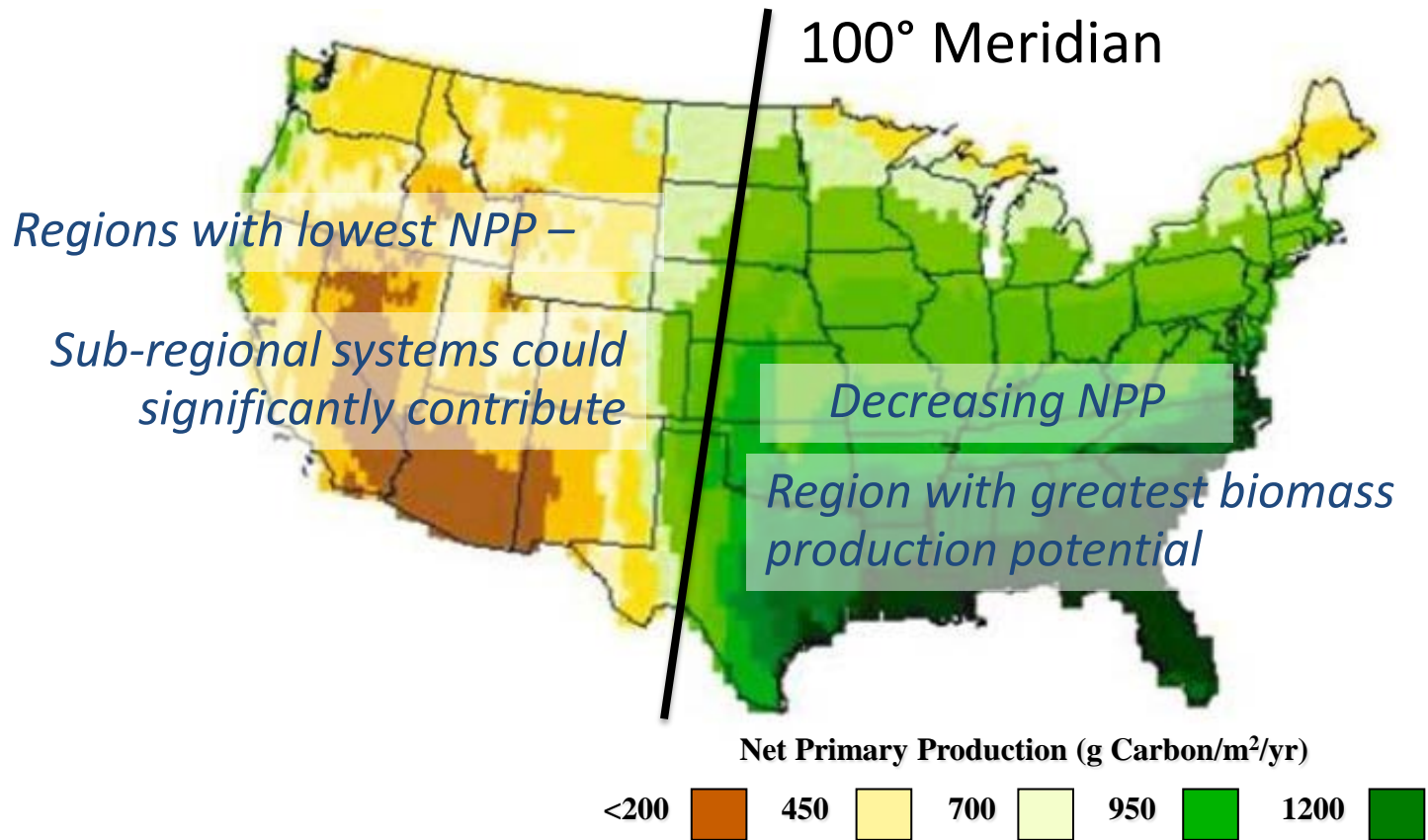
g ns
Do Co re
FAA & DoD
Q/A
A M
fic
D
rc
m
Industry &
P
es

Regionalized Strategies: Different Feedstocks Adapted to Different Regions



No one feedstock or region will meet all bioenergy needs

Implications for United States Biofuels Production



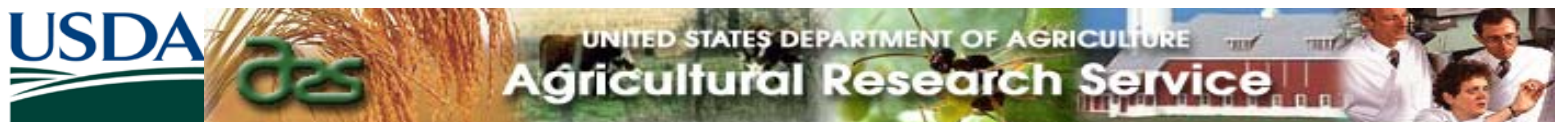
Regionalized Strategies: Feedstock Systems for Different Regions



Every region will make its own unique contribution

Asset-based sustainable development

Overview of Biomass Research Centers



Establishment of the USDA Biomass Research Centers



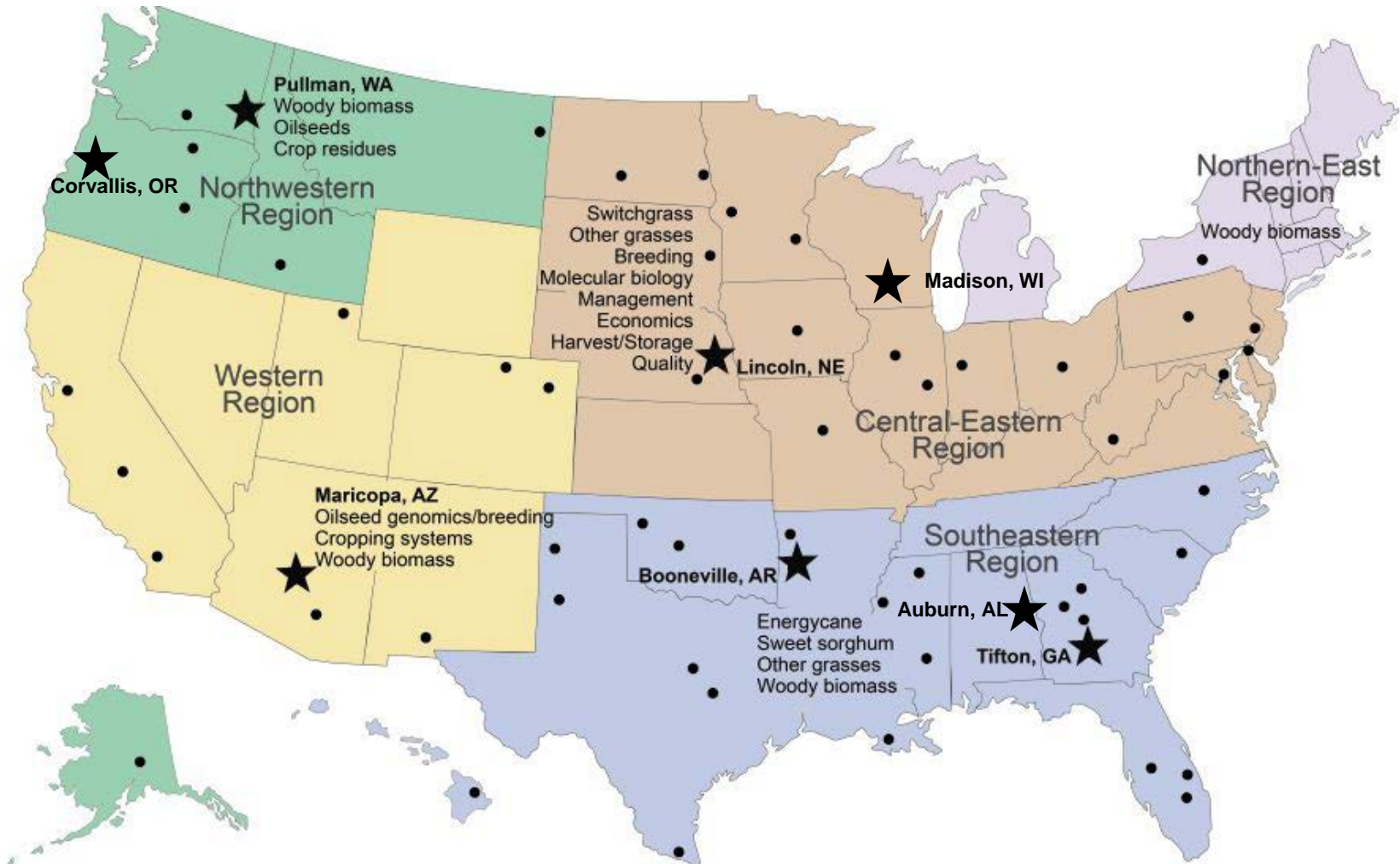
- Presidential Memo, *Biofuels Interagency Working Group* (IWG) – May 5, 2009
- IWG Report *Growing America's Fuels Report* – February 03, 2010
- Secretary Vilsack announcement at the National Press Club – October 21, 2010

USDA Biomass Research Centers Overview

- Networks of *existing* ARS and FS research locations.
- Leverage current USDA nation-wide capacity to lead sustainable biomass production research.
- Coordinate ARS and FS intramural research occurring across different locations into a comprehensive program.
- Coordinate USDA intramural and extramural research efforts.



USDA Biomass Research Centers Coordination Hubs and Agency Leadership

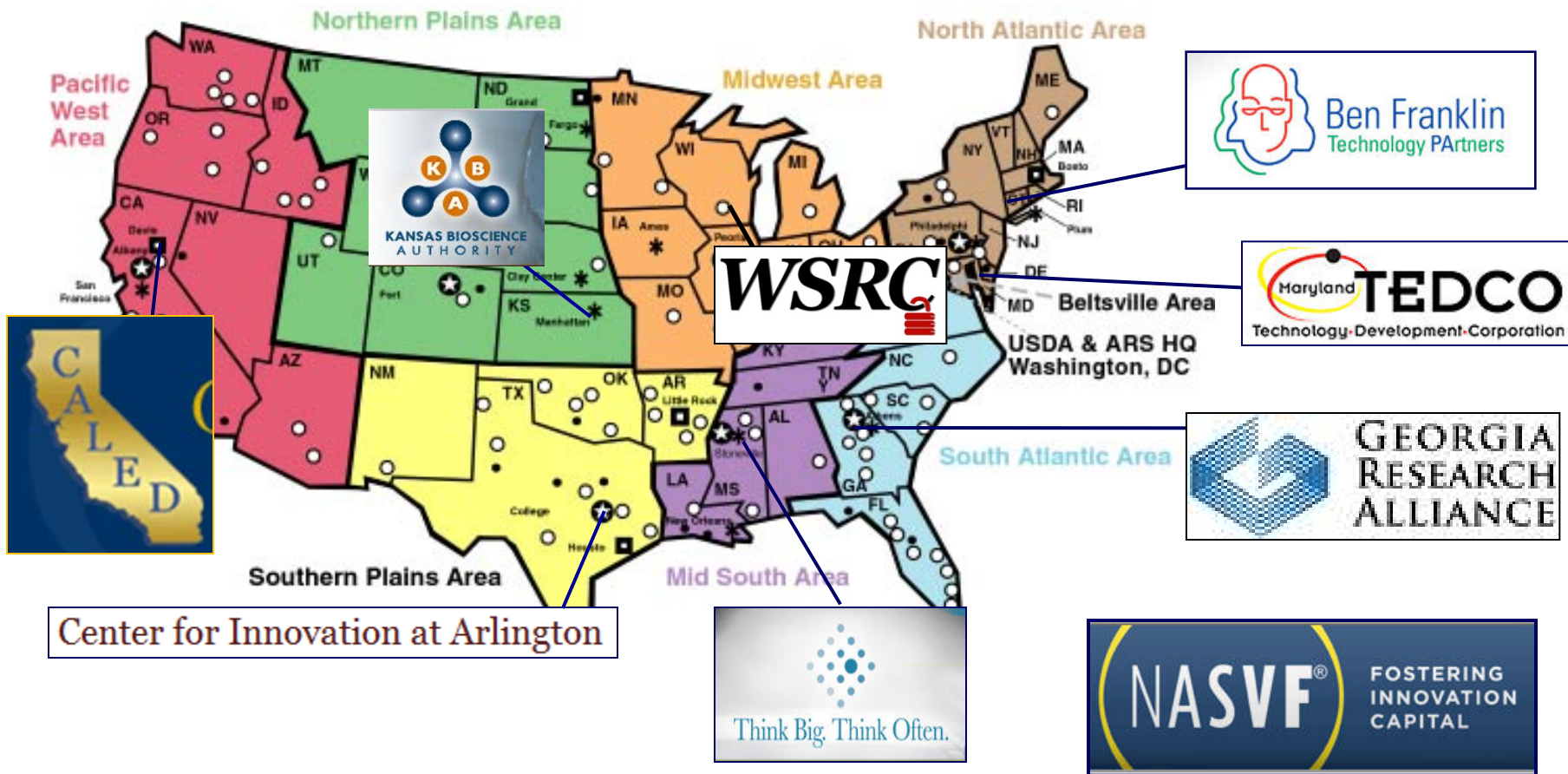


Emphasis on Partnerships

- The centers will coordinate their efforts with USDA service agency programs and other Federal agencies
- Coordinate with universities with inclusion of educational and extension goals
- Target partnerships to include 1890's, Tribal Nations, & Hispanic Serving Institutions participation
- Identifying technology innovation partnerships and other commercial opportunities



Agricultural Technology Innovation Partnership Network



Research Objectives Supporting Sustainable Biomass Production

- Increase biomass production efficiency to increase grower profits and reduce biorefinery transaction costs.
- Optimally incorporate biomass and other dedicated feedstocks into existing agriculture and forestry-based systems.
- Address the uncertainties of expanded production up-front to avoid negative impacts on existing markets and ecosystem services.
- Develop and utilize new value-added coproducts to help enable commercially preferred biorefining technologies.



Example Target: Achieving Cost-Competitive Biofuels

Efficient Complete Supply Chains



Supply chain impact – 1% increase (60 to 61% conversion to HRJ):

- *Lower price – \$0.05/gal*
- *Additional \$650-million to be shared through out the supply chain*

Scaled for a 13-billion gallon aviation industry

Western Strategy for Continual Supply Chain Improvement

Advanced Production Technologies

ARS – Pendleton OR
 ARS – Riverside CA
 RapidEye AG
 Polytech Incorporated
 Stanford University
 Office of Naval Research

ARS Western U.S. Abiotic Stress Agroecosystem Network

Akron CO, Sidney MT, Morris MN,
 Mandan ND, Pullman WA, Prosser
 WA, Pendleton OR, Parlier CA,
 Maricopa AZ

Sustainability Assessments

ARS – Mandan ND
 ARS – Corvallis OR
 ARS – Temple TX
 Michigan Technological University
 Iowa State University
 USDA-NRCS
 Honeywell-UOP LLC

Commercialization

ARS – Office of Technology Transfer
 AeCAP LLC
 GreenG Development
 Kansas State University
 Center for Innovation at Arlington
 California Association for Local
 Economic Development (CALED)
 Enid Regional Development Alliance
 WG Johnston Company
 Sunflower RC&D
 Oppenheimer and Company Inc.

Genetic Improvement

ARS – Maricopa AZ
 KeyGene
 Sustainable Oils
 Cargill Incorporated

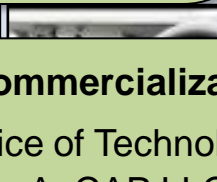
Conversion Technologies

Honeywell-UOP LLC

Oil Chemistry & Preprocessing

ARS – Peoria IL

Locally remove feedstock anti-quality constituents to conversion process



Feedstock Logistics

Biofuels Conversion

Feedstock Logistics

Land use feedstock

stage feedstock facility operation

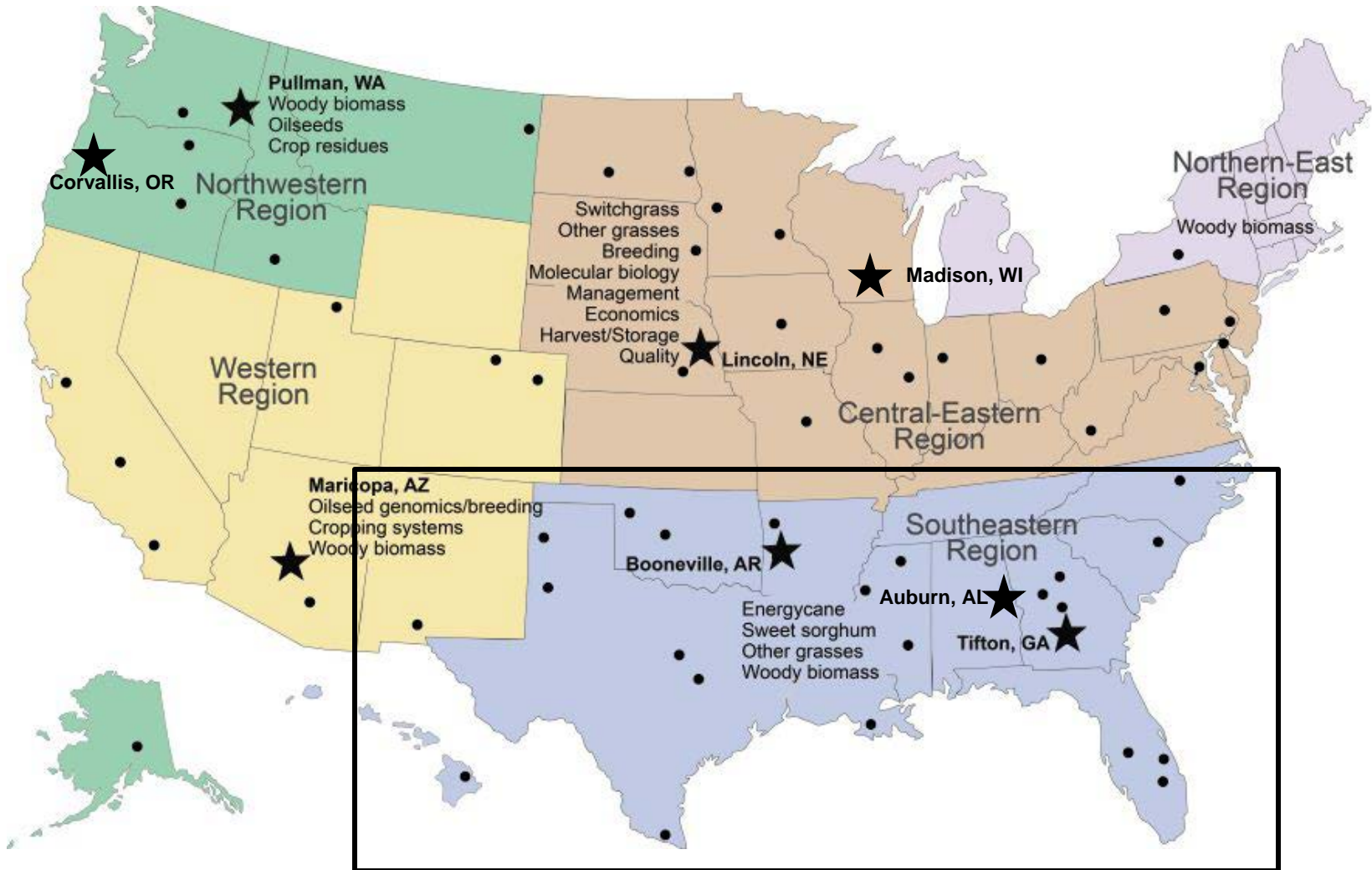
achieve resources

ble Jet (H

assess facilitate cations

Locally remove feedstock anti-quality constituents to conversion process

USDA Biomass Research Centers Coordination Hubs and Agency Leadership



Start Today – Expected Outcomes from this Meeting

An inventory of USDA and other interested expertise
bioenergy-related efforts across the southeast region

New partnerships formed to help accelerate the commercial
establishment of a sustainable biomass industry

