Practices and Policies for Resilient Agriculture

An Overview of USDA Activities

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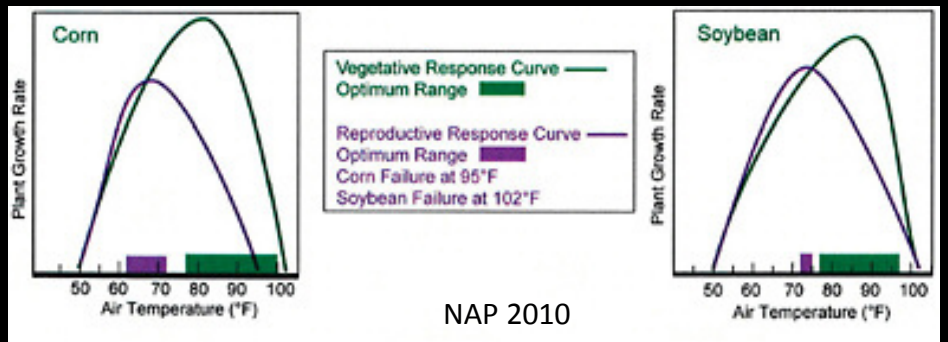
Presentation Outline

- Background
- Science and Monitoring for Risk Management
- Environmental Markets
- Conservation Incentives
- Insurance and Disasters
- Training and Partnerships

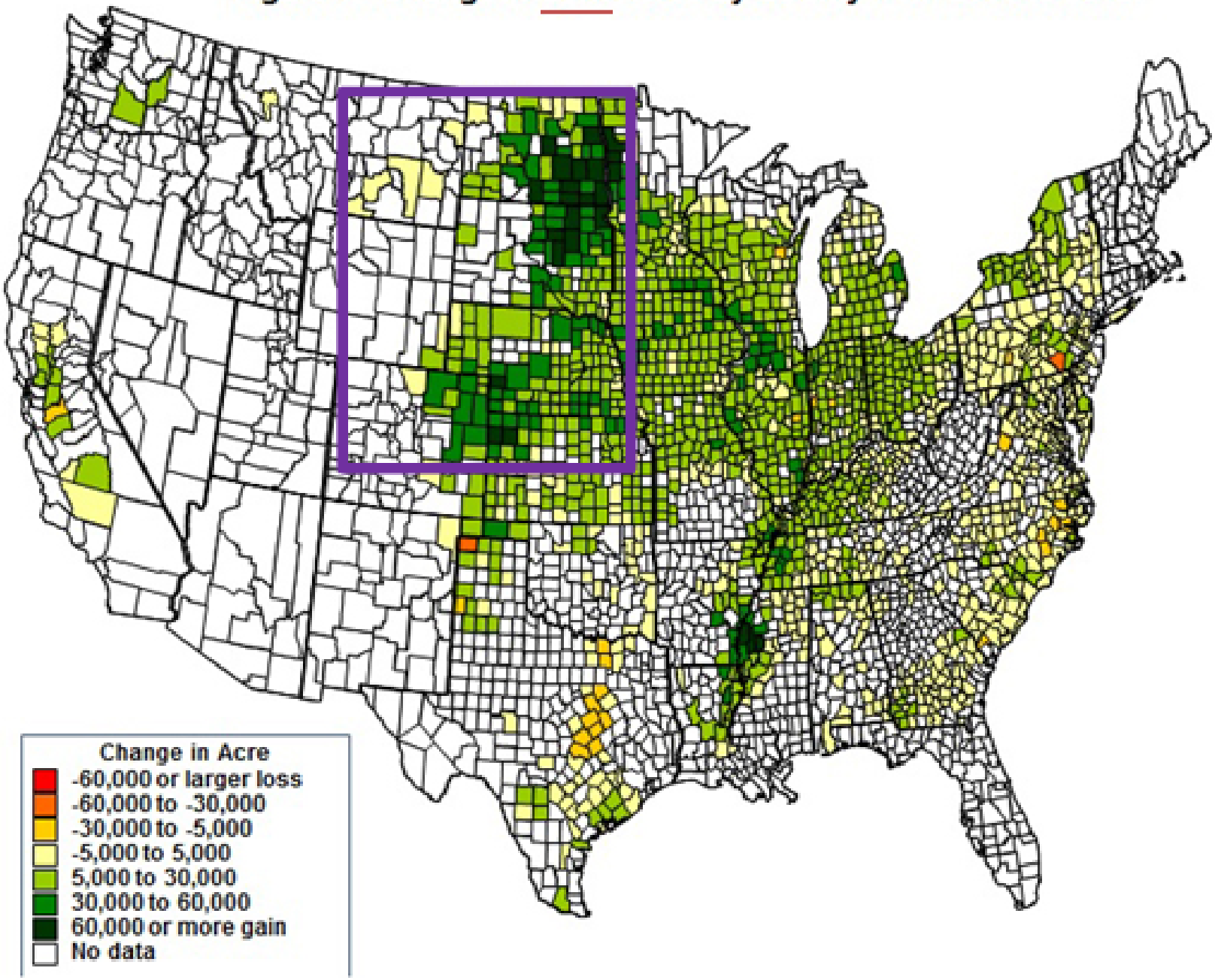
Agriculture and Climate

- Agriculture (crop and animal) have been, and will continue to be, significantly affected by changes in climate.
- Adaptation can help offset many – but not all – effects over the next 20-30 years. Effects are very likely to worsen significantly beyond then, especially if GHG emissions remain high.
- Improving agricultural resilience requires a healthy natural resource base (water & soil) and the development of new strategies, tools, and practices.



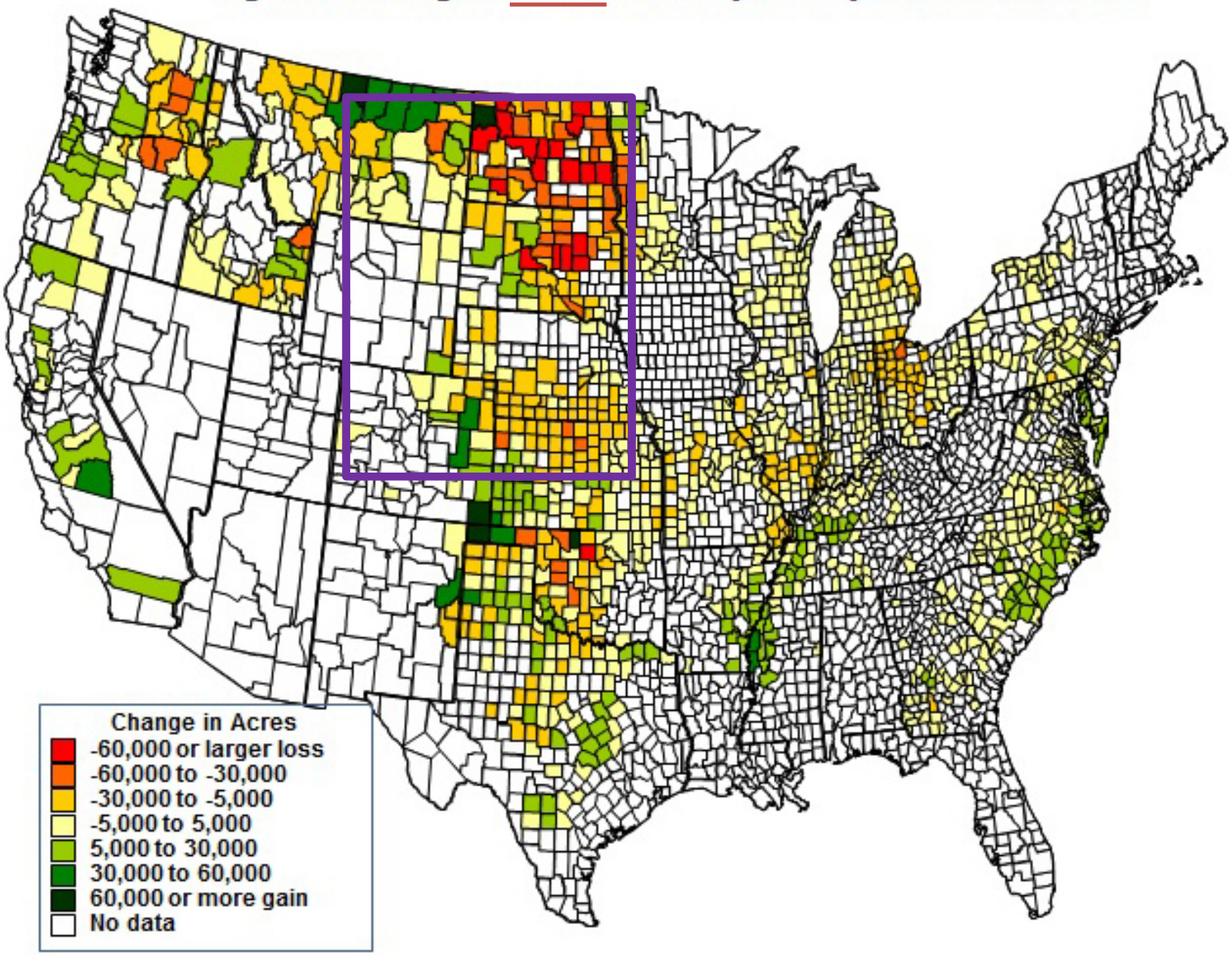
NAP 2010

Figure 1. Change in Corn Acres by County from 2006 to 2012.



USDA NASS 2013

Figure 3. Change in Wheat Acres by County from 2006 to 2012.

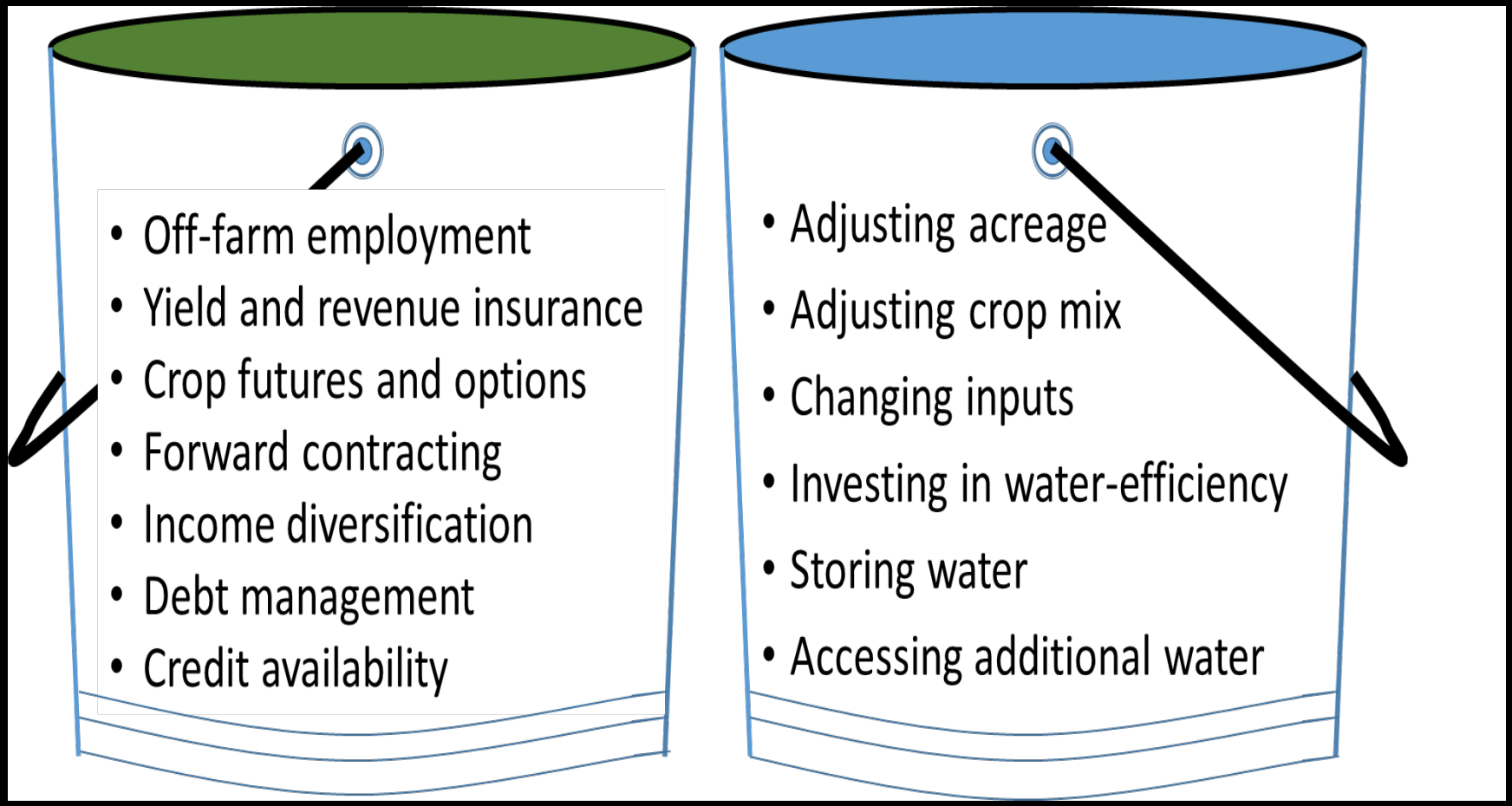


USDA NASS 2013

Scientific Research
Priorities, Planning, and Deployment

- Global Food Supply and Security
- Climate and Energy Needs
- Sustainable Use of Natural Resources
- Nutrition and Childhood Obesity
- Food Safety
- Education and Science Literacy
- Rural Prosperity

Agricultural Risk Management

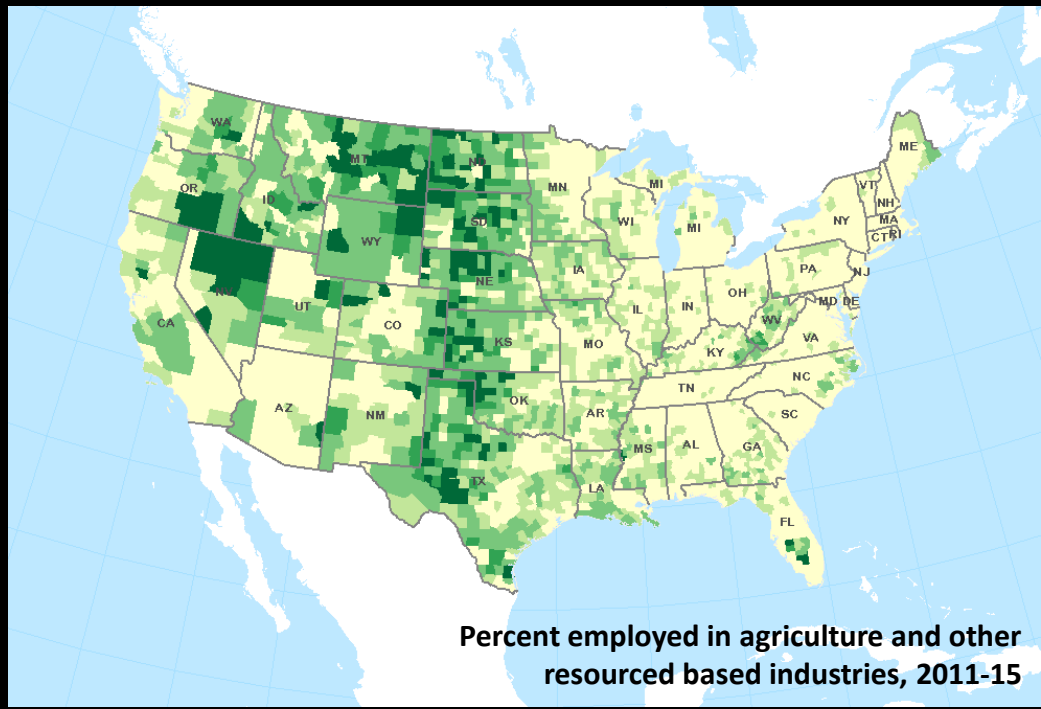


Financial

Agronomic

Inventories, Surveys, Mapping and Evaluation

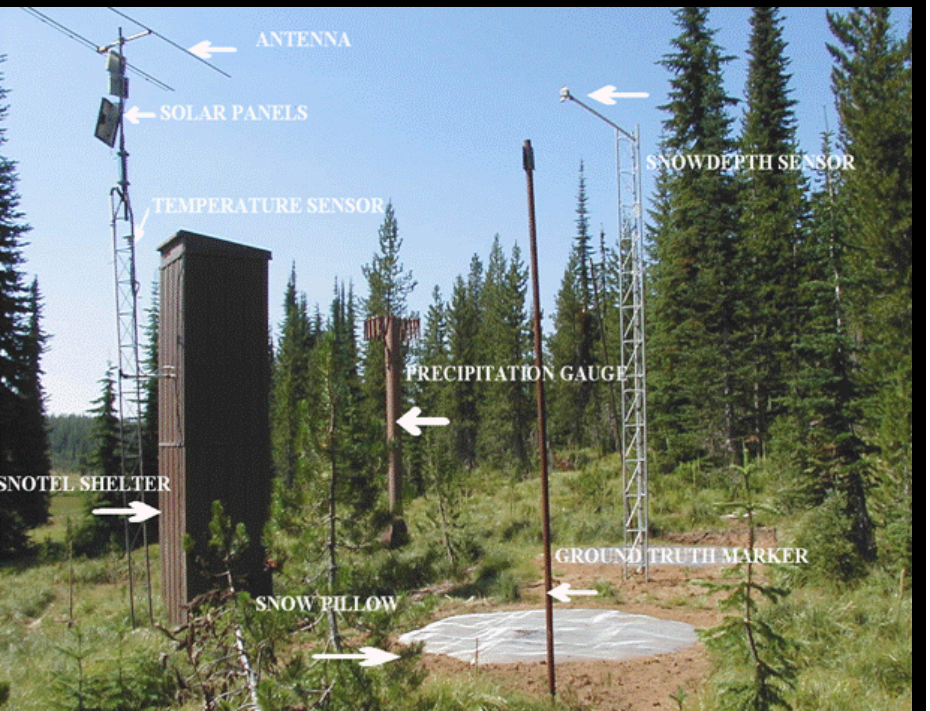
- Agricultural Resource Management Survey **(ARMS)**
- National Resources Inventory (NRI)
- Greenhouse Gas Inventory of U.S. Agriculture and Forests
- Conservation Effects Assessment Project (CEAP)

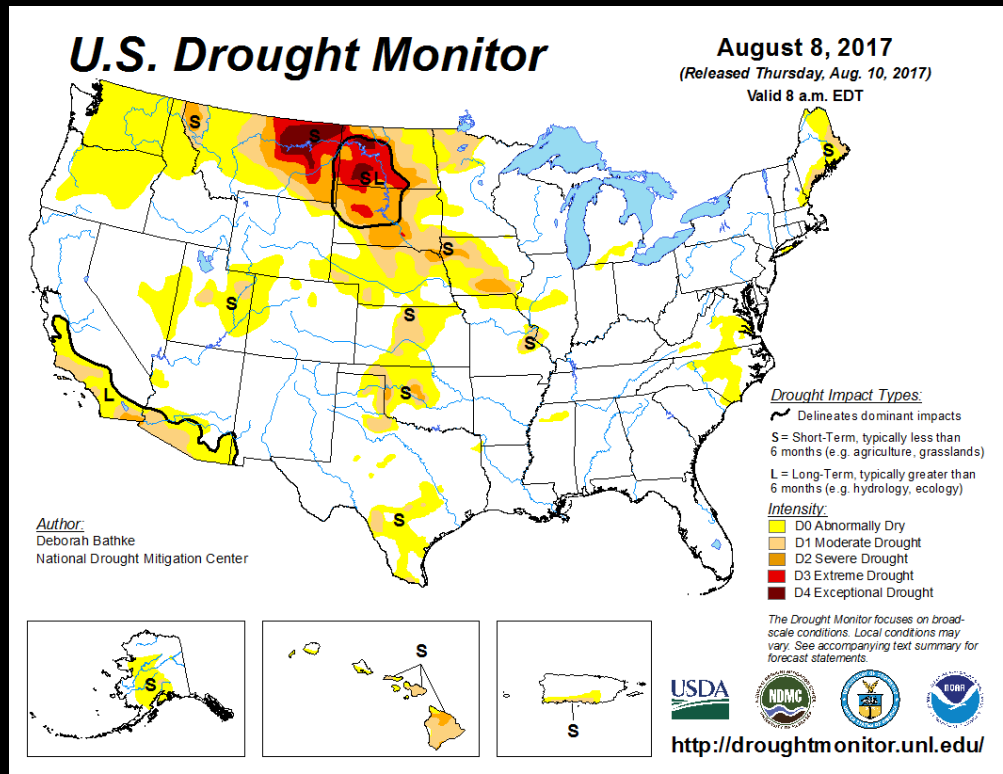


Percent employed in agriculture and other resourced based industries, 2011-15

Hydrologic Monitoring

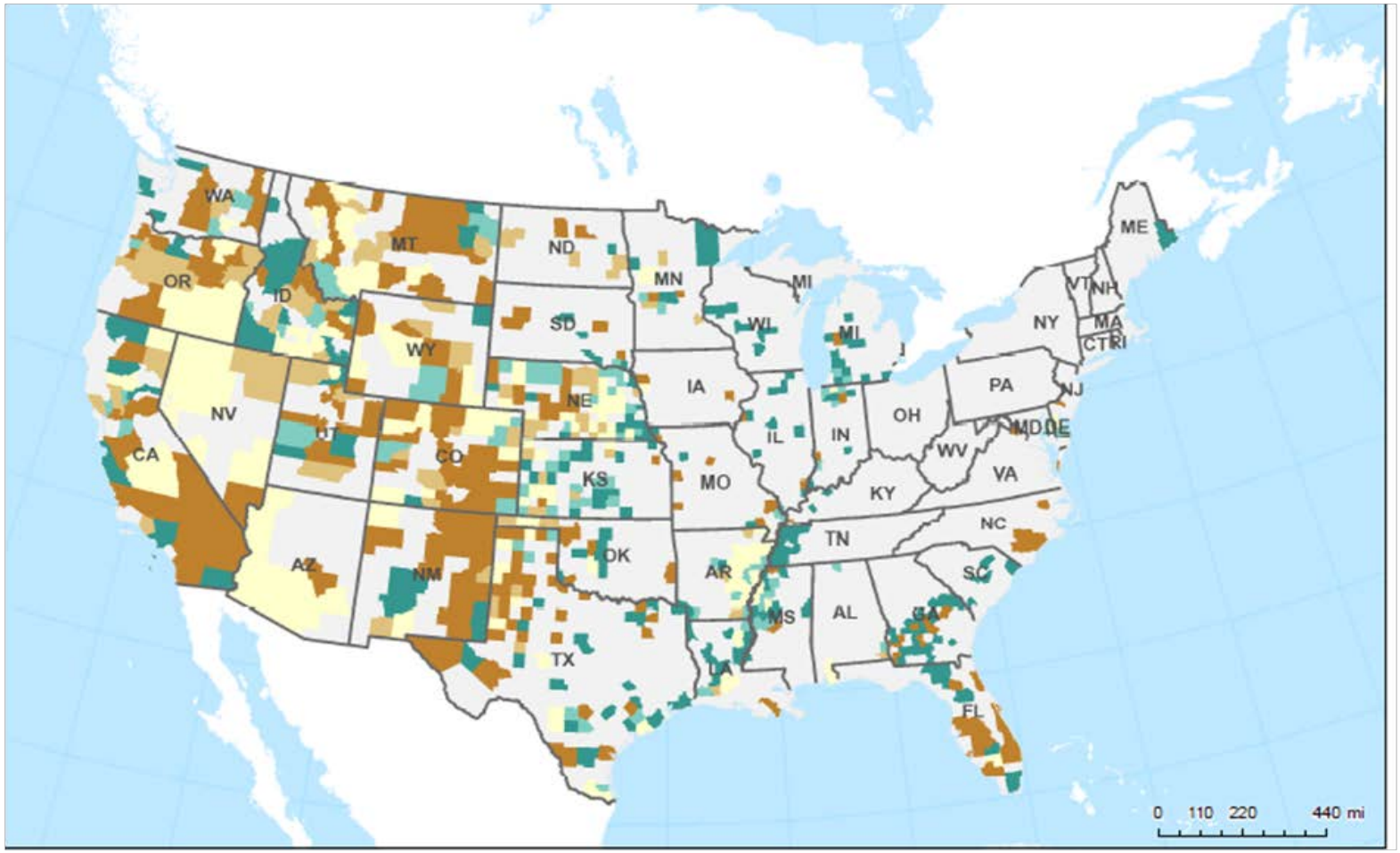
- Soil Climate Analysis Network (SCAN)
- SNOpack TELemetry (SNOTEL)
- U.S. Drought Monitor





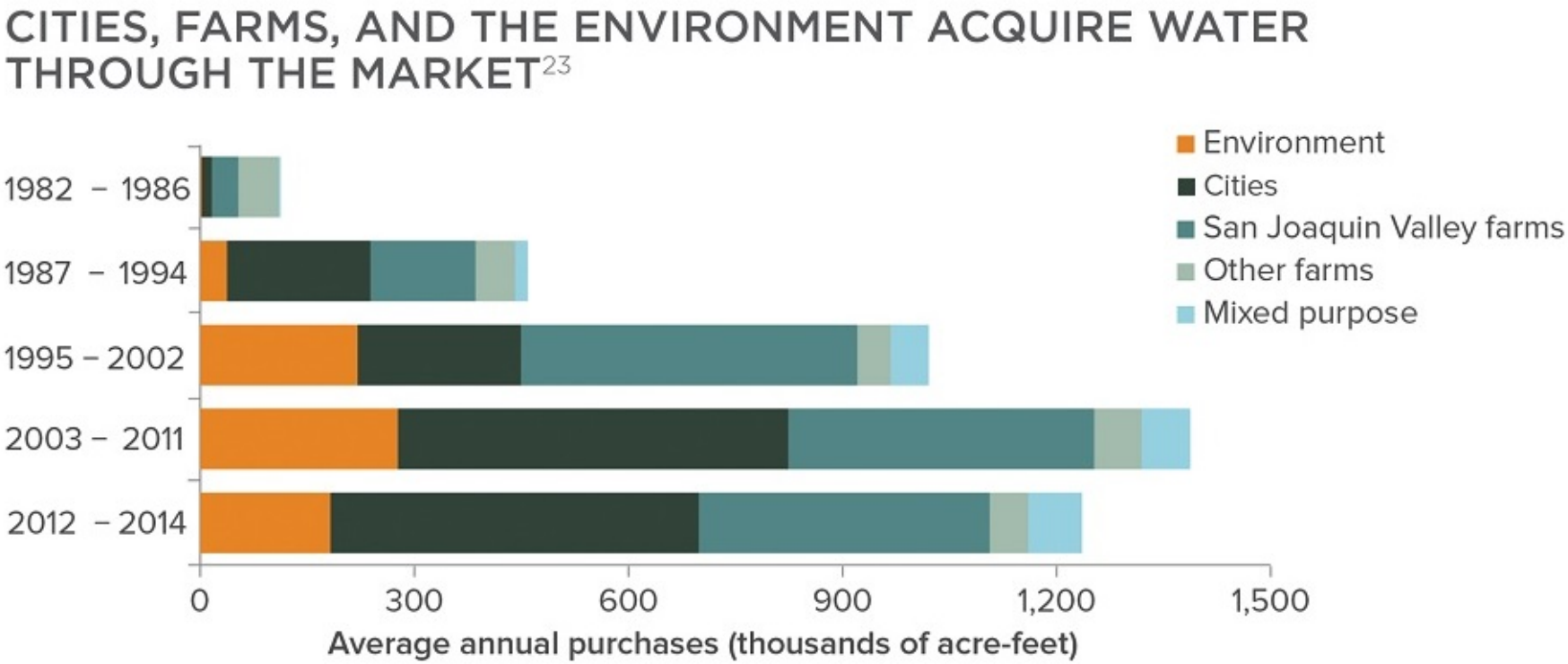
Farmer Response

County-level Change in Irrigated Acres 2007 to 2012



Significant Reduction — Significant Increase

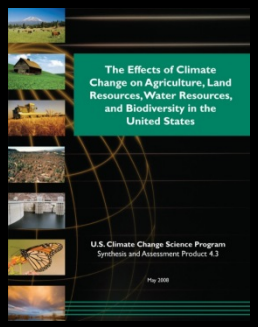
Environmental Markets

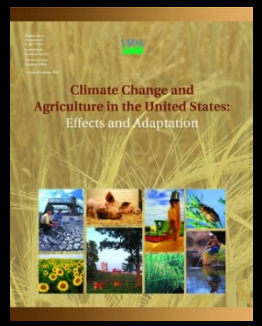


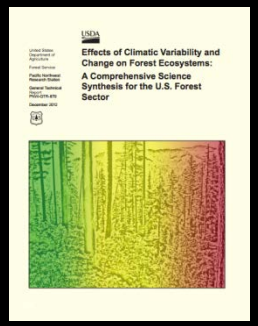
SOURCE: Updated from E. Hanak and E. Stryjewski. California's Water Market, By the Numbers: Update 2012 (PPIC, 2012).

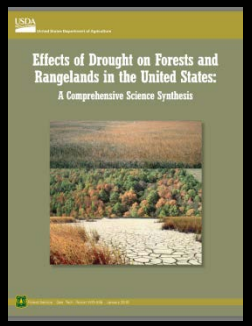
https://www.usda.gov/oce/environmental_markets/

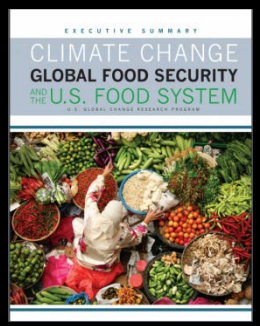
USDA and the U.S. National Climate Assessment

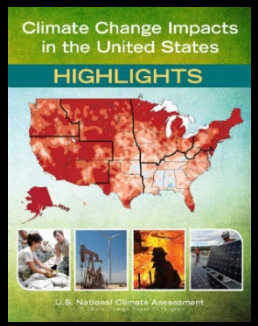












- USDA is one of 13 USG Members of the U.S. Global Change Research Program
- National Climate Assessment required every 4 years
- Agriculture, Forests, and Water are mandatory sectors
- Goal is to "enhance the ability of the U.S. to anticipate, mitigate, and adapt to changes in the global environment."

Incentives

- Environmental Quality Incentives
  - Conservation Innovation Grants
- Conservation Stewardship Program
- Conservation Reserve Program
- Conservation Technical Assistance
- Wildlife Habitat, Wetlands, Grasslands

Insurance and Disaster Relief

- Federal Crop Insurance
- Disaster Assistance
  - Conservation
  - Forests
  - Animal Agriculture
  - Emergency Loans
  - Noninsured Crop Disaster Assistance

Training
for Producers and Consumers

Land Grant Universities

Focus on Agriculture and Science

Extension Services

Advanced Technologies

Animals

Business and Economics

Education

Environment

Farming and Ranching

Food Science

Health

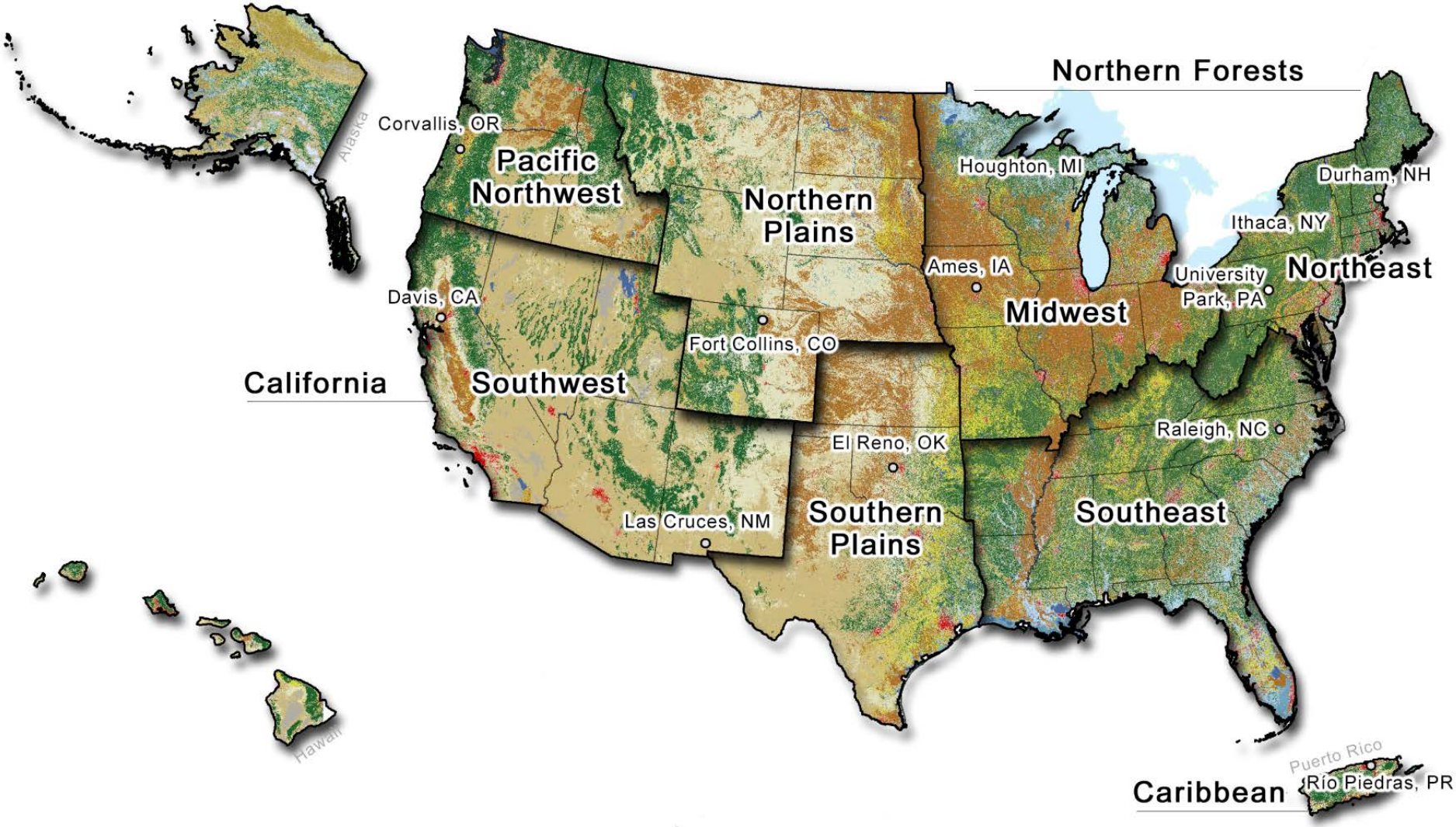
Human Sciences

International

Natural Resources

Plants

USDA Regional Climate Hubs



USDA Climate Hubs

Vision: Agricultural production and natural resources maintained and strengthened under increasing climate variability and environmental change

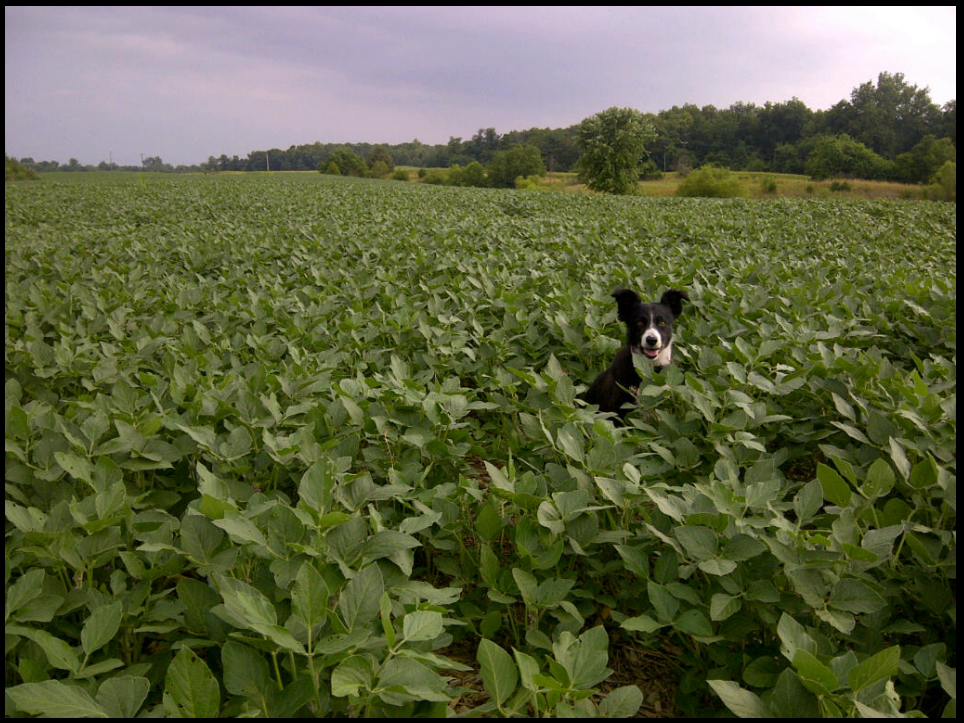
Mission:
Develop and deliver science-based, region-specific information and technologies to agricultural and natural resource managers; to enable climate-informed decision-making, with USDA partners (internal and external to USDA)

Hub Purpose and Activities

- Regional convening forums around which USDA staff and stakeholders can meet to discuss climate change, resilience, and mitigation/adaptation opportunities.
- Help USDA agencies accomplish their missions as they look to become more climate-informed and resilient.
- Assist producers with identifying opportunities to access USDA agency program funding to help them manage risk.
- The Hubs educate USDA staff and partners on the climate vulnerabilities in their region, and offer strategies to adapt to risks. (e.g., tools, regional vulnerability analyses)

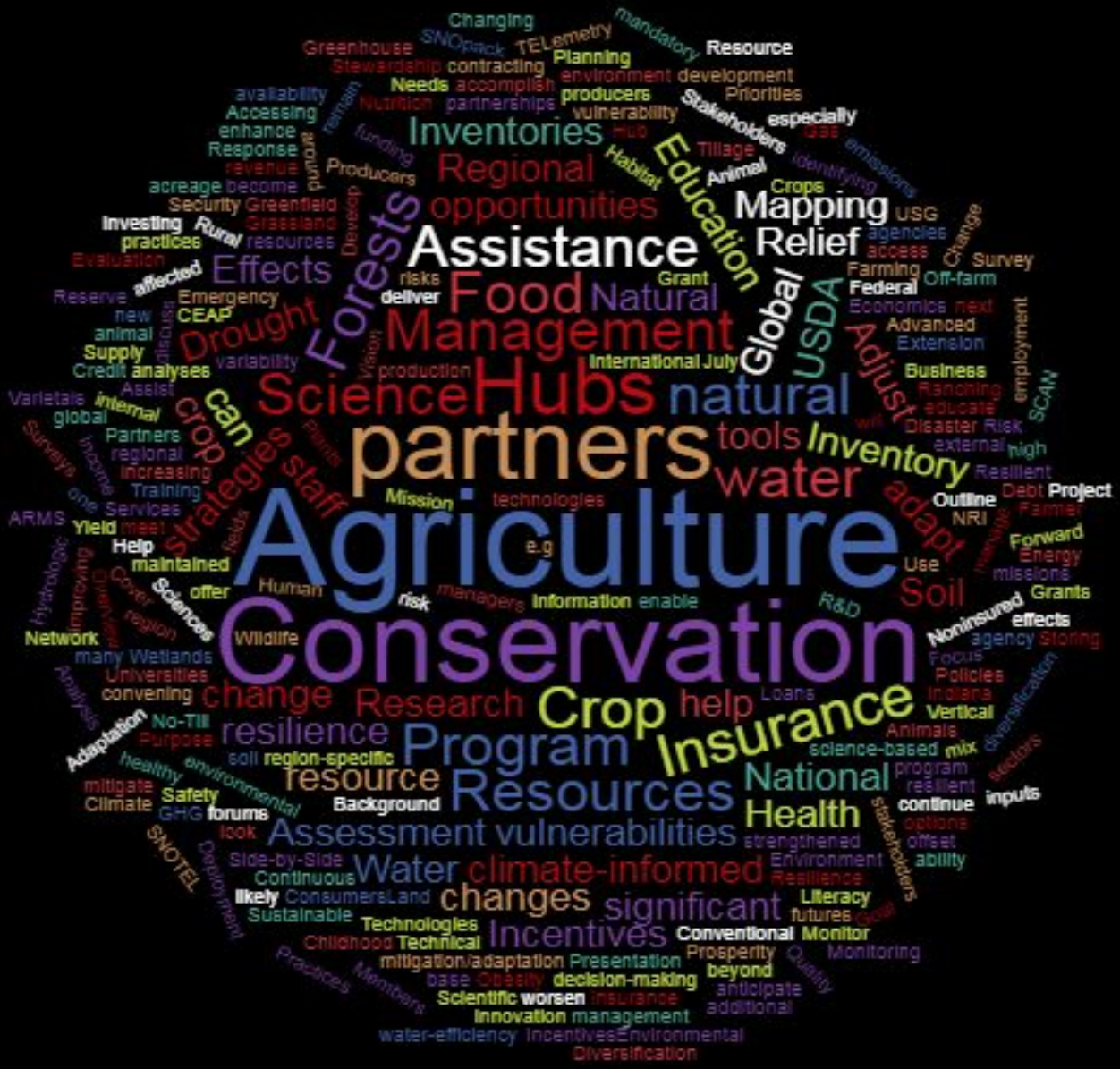
2012 U.S. Drought

Side-by-Side fields in Greenfield, Indiana
July 2012



11 years of Continuous No-Till + 5 years of Cover Crops

Vertical (Conventional) Tillage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Hubs
Science
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Assistance
Forests
Food
Mapping
Relief
Education
Global
USDA
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Inventories
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opportunities
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natural
tools
Inventory
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Soil
Crop
Insurance
Program
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Research
help
resource
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Health
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Water
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Incentives
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Stewardship
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