# National Program 216: Agricultural Competitiveness and Sustainability

# USDA-ARS National Programs

| Natural Resources & Sustainable Agricultural Systems (20%) | Crop Production& Protection (35%) | Animal Production & Protection (15%) | Nutrition, Food Safety & Quality (30%) |
|---|---|---|---|
| • Water Availability & Watershed Management<br>• Soil & Air Resource Management<br>• Bioenergy<br>• Agricultural Waste and Byproduct Utilization<br>• Pasture, Forage and Range Land Systems<br>• Agricultural System Competitiveness and Sustainability | • Plant, Microbial & Insect Germplasm Conservation & Development<br>• Plant Biological & Molecular Processes<br>• Plant Diseases<br>• Crop Protection & Quarantine<br>• Crop Production<br>• Methyl Bromide Alternatives | • Food Animal Production<br>• Animal Health<br>• Arthropod Pests of Animals and Humans<br>• Aquaculture | • Human Nutrition<br>• Food Safety<br>• New Uses, Quality & Marketability of Plant & Animal Products |

# NP-216 Customer Workshops

- Integrated agricultural systems workshop
- Organic agriculture workshop
- Agriculture automation workshop
- Scientist research planning workshop

# NP-216 Action Plan 2008-2013

Four Research Components

- Agronomic crop production systems
- Specialty crop production systems
- Integrated whole-farm production systems
- Integrated technology and information to increase customer problem solving capacity

# Agricultural System Competitiveness and Sustainability

Research focuses on six approaches to address whole-farm competitiveness and sustainability:

- ***Landscape-scale agro-ecosystems***
  Identify new configurations of practices that utilize on-farm resources and natural ecosystem processes to reduce the need for purchased inputs and thus reduce whole-system costs and risks.
- ***New technologies***
  Develop precision management, automation, and decision support technologies to increase production efficiencies, reduce costs, and limit adverse impacts or even enhance natural resources quality.

# Agricultural System Competitiveness and Sustainability

- ***Bioenergy***
  Develop strategies for incorporating sustainable bio-based energy production into existing farm enterprises to increase income diversity and contribute to whole-farm energy self-sufficiency.

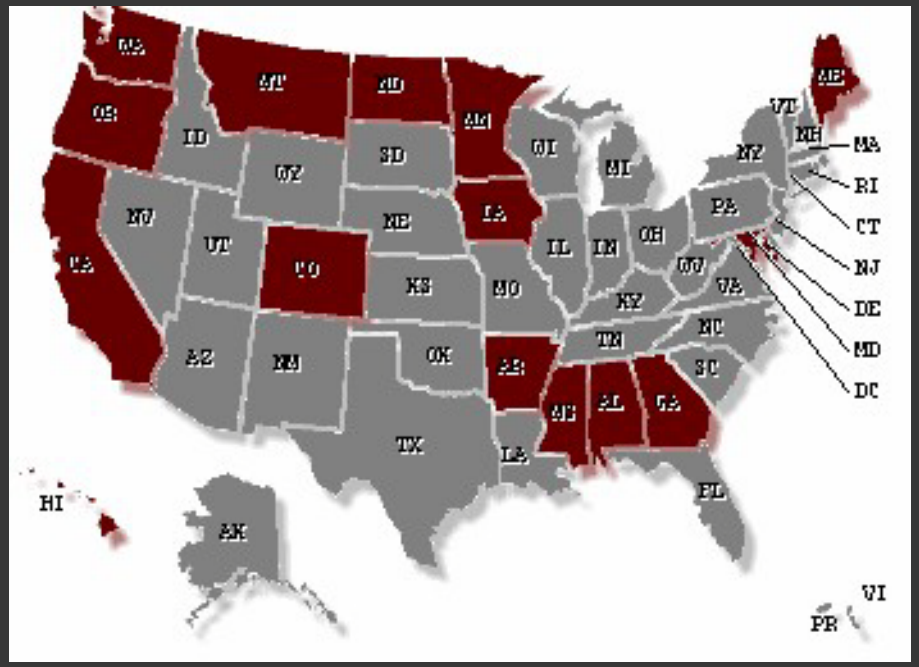
- ***Markets and Supply Chains***
  Incorporate consumer preference and supply chain economic information to expand market opportunities and demonstrate how producers can respond to changing markets and increase economic returns.

# Agricultural System Competitiveness and Sustainability

- ***Science-based policy***
  Provide scientific knowledge and analyses to inform policymakers seeking solutions to increase agricultural profitability, efficiency, and competitiveness.

- ***Partnerships***
  Use industry, Federal, State, and local partnerships to identify and solve problems, convey research results and information transfer, and advance adoption of improved practices for different kinds and sizes of farms.

# Agricultural System Competitiveness and Sustainability Program Locations

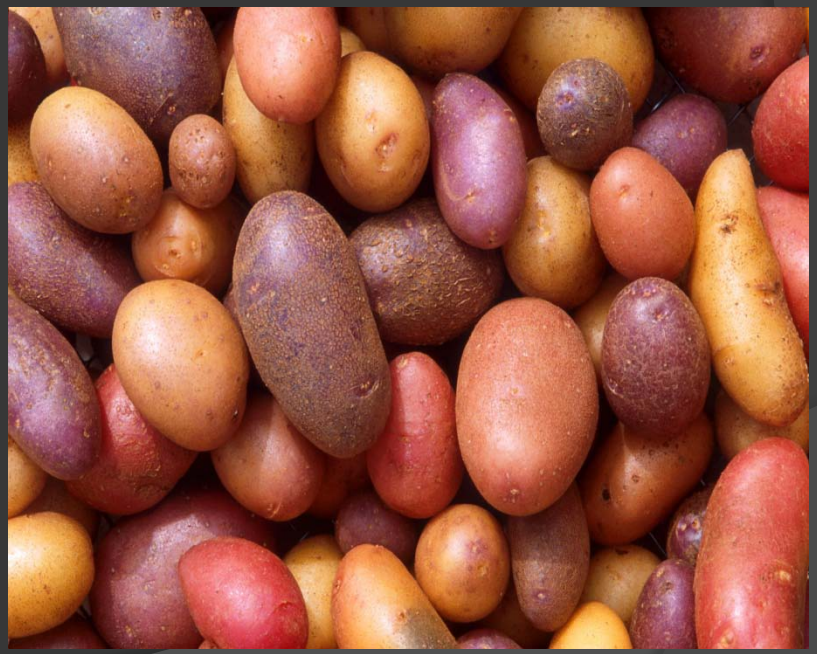



**Program Vision**

Help producers develop integrated solutions that solve their problems related to productivity, profitability, energy efficiency, and natural resource stewardship

# Agricultural System Competitiveness and Sustainability – Research Examples

Scientists at Prosser, WA developed a reduced tillage strategy in potato rotations that reduced greenhouse gases, soil erosion, and cut tillage operations 40% while improving soil structure and maintaining high yields and weed control.



# Agricultural System Competitiveness and Sustainability – Research Examples

Sidney, MT ARS developed a widely-adopted sugar beet strip tillage system providing savings in fuel and field preparation time of about $80/ac plus significant wind protection for young plants.

# Agricultural System Competitiveness and Sustainability – Research Examples

- Quantitative soil carbon sequestration estimates were developed for agricultural systems throughout the Southeast.

# Agricultural System Competitiveness and Sustainability – Research Examples

- Conservation system management tips were developed and summarized that emphasized selection, establishment, fertilization, termination, equipment considerations, and economics in high-residue systems for growers, extension agents, and other scientists across the U.S.

# Agricultural System Competitiveness and Sustainability – Research Examples

Rolling mature winter cereal cover crops can reduce weed emergence and conserve soil moisture compared to standing covers, thus integrating weed and soil moisture management.

# Agricultural System Competitiveness and Sustainability – Research Examples

Scientists in Beltsville, MD showed that increasing crop rotation diversity in organic systems resulted in increased corn yield and decreased weed pressure, economic risk, manure requirements, soil erosion, and nitrous oxide emissions.

# Agricultural System Competitiveness and Sustainability – Research Examples

Stoneville scientists developed a sampler for measuring the spatial variability of cotton lint. A difference in economic return of more than $200 per acre was demonstrated, dependent largely on the variability of soil properties across a field.

# Agricultural System Competitiveness and Sustainability – Research Examples

Scientists at Pendleton, OR developed a new spectral index that is both resistant to soil reflectance and sensitive to crop chlorophyll. The new index will improve ground-based sensing of crop nitrogen status, particularly for the majority of U.S. wheat grown under dryland conditions.

# Agricultural System Competitiveness and Sustainability – Further Information

- Additional accomplishments can be located on the NP 216 web page.
  - Annual Reports
  - Cumulative accomplishment report 2008-2011
- The NP 216 Action Plan can also be located there.
- http://www.ars.usda.gov/research/programs.htm
  - Click link for Agricultural System Competitiveness and Sustainability (NP 216).

# Review of NP 216

- As a part of ARS' National Program planning and management process, an outside panel of experts is asked to review the program accomplishments to date
  - This helps us to improve our performance and accountability
  - It is used to help guide the planning for the next five year cycle.

# Review of NP 216

- NP 216 was reviewed in December 2011.
- The panel Chair, Dr. Jeff Mitchell of the University of California at Davis will provide us with an overview of their conclusions.

# Questions?

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