Water and Agriculture: A 21st Century Challenge

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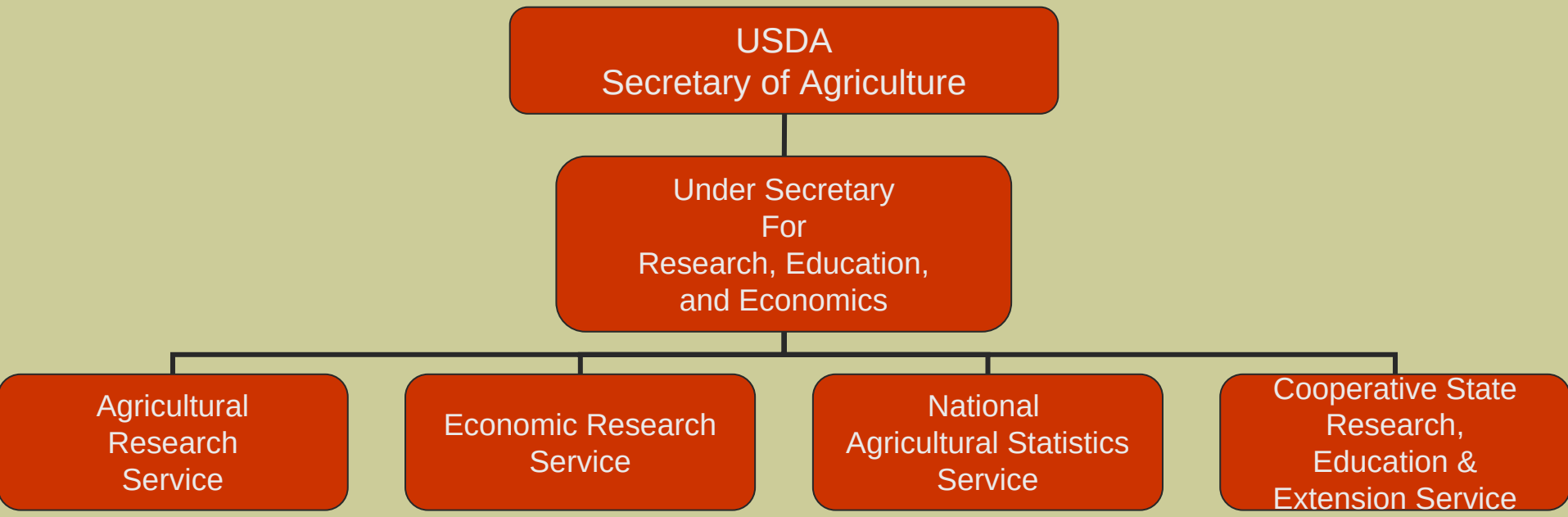
Research, Education, and Economics



Agricultural Research Service

- Intramural research arm
- 100+ laboratory locations
- 2,500+ scientists
- $1B annual budget
- Farm-to-table research scope

http://www.ars.usda.gov/

Cooperative State Research Education and Extension Service

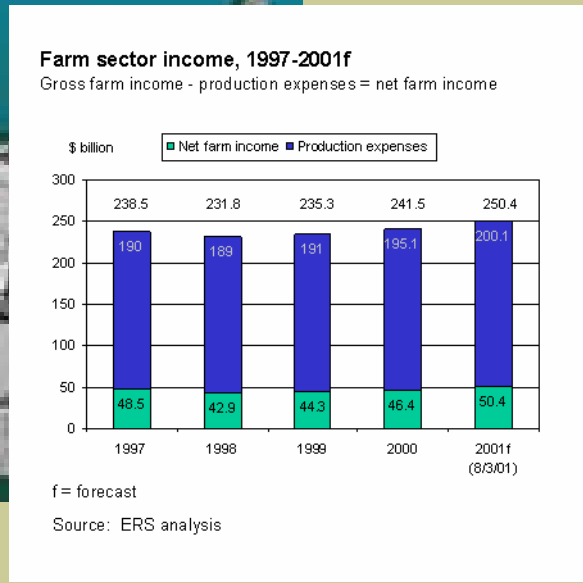
- **57 land grant universities**
- **18 historically black colleges and universities**
- **33 Native American land-grant institutions**

- **Extramural research, education, and extension for USDA**
- **$1B annual budget**

http://www.csrees.usda.gov

Economic Research Service

- Develops and distributes economic and social science information and analyses



http://www.ers.usda.gov/

National Agricultural Statistics Service

- Crop, livestock, economic, and environmental data
- Census of Agriculture

NASS
Fact Finders For Agriculture
U.S. Department of Agriculture

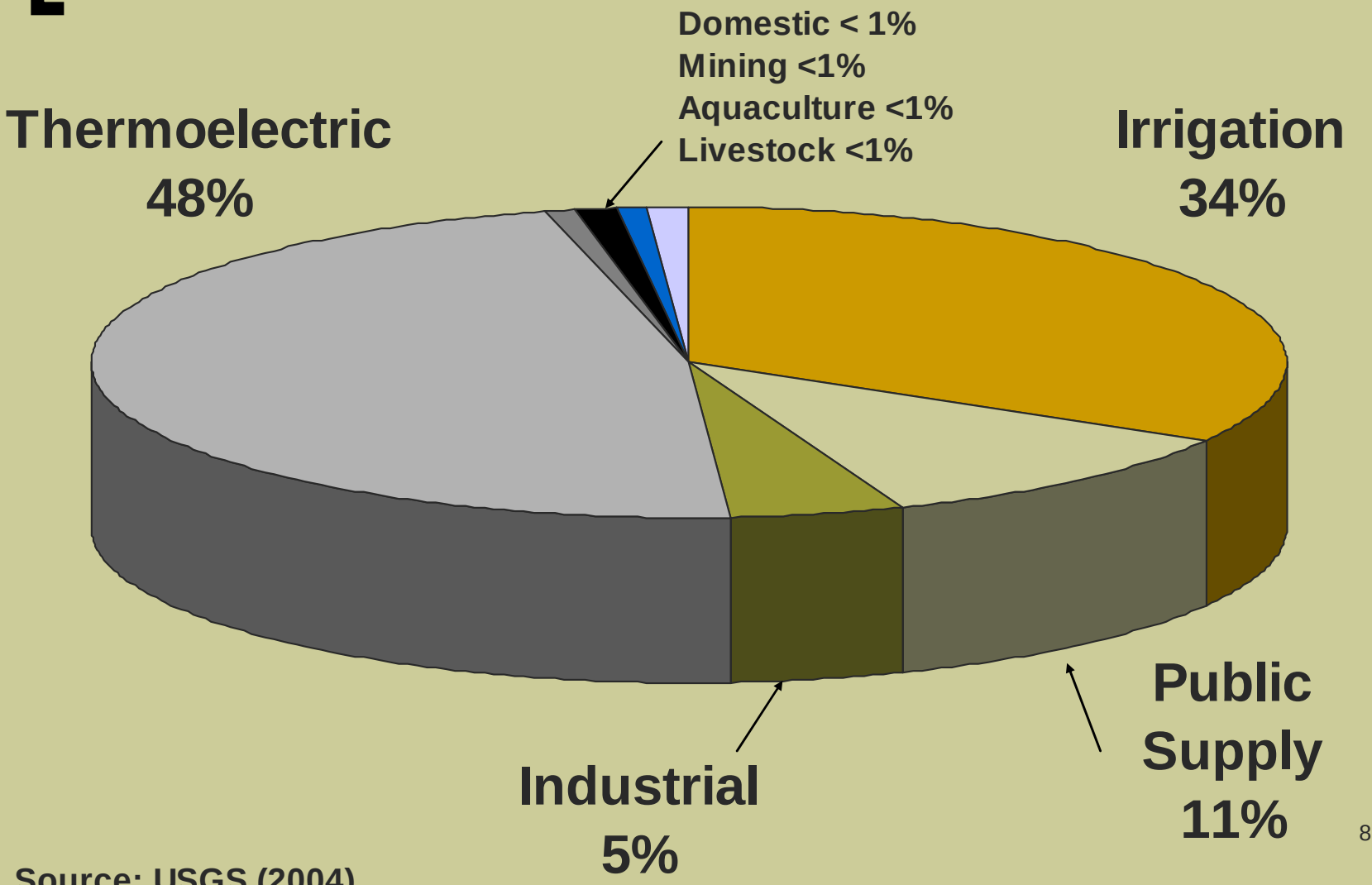
http://www.usda.gov/nass/

USDA Water Quality Programs

- Excellent history of water quality research and extension projects from across the nation
  - HUA, DEMO, MSEA

- Focused efforts to protect and improve critical water bodies
  - Gulf of Mexico, Chesapeake Bay, Colorado River, Great Lakes

Total Water Withdrawals in the United States in 2000



Source: USGS (2004)

Competition for Water

- Water consumption by agriculture is estimated at 80-90% of all water use
- Urban and suburban growth in the Southeast and across the West are increasing competition for scarce water resources

Water Use in Agriculture

- As competition increases, agriculture is viewed as the principle source of available water for domestic or municipal uses.
- Agriculture also represents a critical source for providing environmental services and instream flows.

Options for Expanding Available Water in Agriculture

- Increase conservation
- Improve irrigation efficiencies
- Plant biotechnology
- Water reuse

Water Reuse in Agriculture

- Implications for research, education, and economics
- Opportunities for partnerships
- Upcoming activities

Water Reuse: Research Challenges

- How far can we extend water uses through reuse of wastewater?
- What human health concerns must be considered when reuse water is applied to vegetable crops?
- What are the economic, social, and policy implications of water reuse?

Water Reuse: Extension and Outreach Opportunities

- Exploring opportunities to match available water quality with appropriate water uses
- Educating the public regarding safety and potential hazards of water reuse
- Engaging stakeholders from multiple communities to seek water management solutions

Water Reuse: Role of Education

- “Growing” scientific expertise for future research and education programs
- Bringing new water management and food safety technologies into the classroom
- Potential for new emphasis areas in traditional disciplines

Partnership Opportunities

- Intersection of food safety and water resources management
  - Well-established CSREES programs
- Federal Partnerships
  - Water management, food safety, human health, and crop production issues cross multiple Departments and agencies
- Private Sector Partnerships
  - Nurseries, commodity groups, and others
- International Partnerships
  - Opportunities to “import” and “export” water reuse knowledge (Middle East, Africa, Asia)

Workshop: Water Reuse in Agriculture

- Tentatively scheduled for Fall 2006
- Joint effort between USDA, WateReuse Foundation, and Bureau of Reclamation
- Focus on identifying the state of current knowledge and information gaps

Thank You!

- Dr. Merle Pierson

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