

Climate Change Science *in the* Agricultural Research Service USDA

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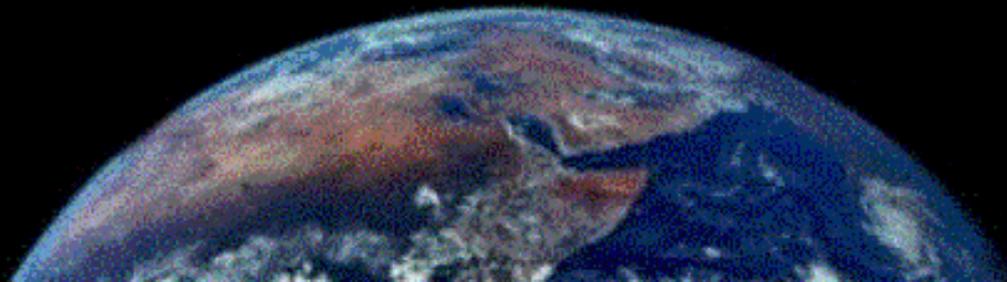
Climate Change Strategy

The background of the slide features a large, semi-transparent seal of the United States Department of Agriculture. The seal is circular and contains a central shield with a plow, a sheaf of wheat, and a bundle of cotton. The words "DEPARTMENT OF AGRICULTURE" are written around the perimeter of the seal.

- **USDA is uniquely qualified to address climate change**
 - **A century of research on climate and weather impacts on agriculture, and how to develop resilience, adaptation.**
 - **30+ years of research on climate change.**
 - **Broad Departmental mission**
 - **Research, tech transfer, public land management, technical assistance, communications, education**
 - **Extensive relationships for solving complex problems**
 - **State Depts. of Agric, universities, private sector, policy makers, farmers-ranchers-foresters, communities**

ARS Takes a Risk-Based Approach to Climate Change Research

- **Identify** potential risks and benefits to agriculture that may arise from a changing environment.
- **Quantify** their likelihood and consequences.
- **Adapt** to take advantage of benefits and avoid undesirable consequences.
- **Mitigate** the Nation's net GHG emissions.



REE Climate Change Strategy

based on the USDA Climate Change Science Plan

- **EXPLAIN**

- Explain the processes driving direct and indirect effects of climate on agroecosystems.
- Elucidate feedbacks between agroecosystem management and the climate system.

- **ADAPT**

- Avoid the negative impacts.
- Take advantage of the positive effects.
- Increase resilience in agricultural systems.

- **MITIGATE**

- Reduce agriculture's greenhouse gas footprint.
- Use agriculture to offset emissions in other sectors of the economy.

- **SUPPORT DECISIONS**

- Improve the public's understanding of how agriculture and climate affect each other.
- Increase the application and benefits of USDA science on climate change for farmers, land and natural resource managers, communities, and policy makers.

ARS Climate Change Research: Mitigation

- **Increase C sequestration (land use practices)**
- **Reduce emissions**
 - Nutrient management
 - Animal and waste management
- **Reduce GHG intensity (net emissions per unit of commodity produced)**

ARS Climate Change Research: Adaptation

- **Adapt agriculture to sustain productivity as climate changes and the demand for food, feed, fiber, and fuel increases with population.**
 - **What to plant, when to plant, how to manage**
 - **Livestock stresses**
 - **Risks from pests, fires**
 - **Water resource management**
 - **Take advantage of opportunities from emerging technologies and markets.**

Research that *Explain*.



Climate Change Strategy Outcomes

USDA research agencies and university partners will design and implement new outreach and education programs which are science-based and link individual actions to environmental impact.

