

USDA/ARS National Program 211: Water Availability & Watershed Management

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USDA/Agricultural Research Service (ARS)



Water Availability & Watershed Management

(http://www.ars.usda.gov/research/programs/programs.htm?NP_CODE=211)

Vision

Integrated, Effective, & Safe Water Resource
Management

Mission

- (1) Conduct fundamental & applied research on the processes that control water availability & quality for the health & economic growth of the American people;
- (2) Develop new & improved technologies for managing the Nation's agricultural water resources.

Goal

Effectively & Safely Manage Water Resources While
Protecting the Environment & Human and Animal
Health

NP211: Water Availability & Watershed Management

Program Status

- 2011-2015 Action Plan – completed Fall 2010
- Project Plans Certified – late 2011/early 2012
- 2007-11 Accomplishment Report – completed early 2012
- 35 projects; \$52.5 million NTL; 135 SY's



Figure 1: Primary (black) and contributing (blue) NP211 locations; open circles (black) indicate projects that moved or left the program during the course of the Action Plan.



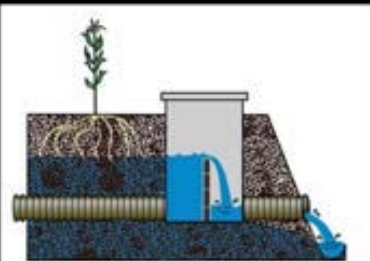
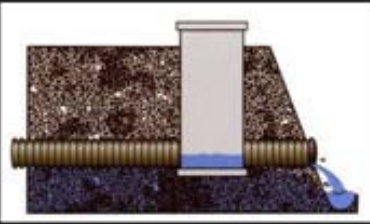
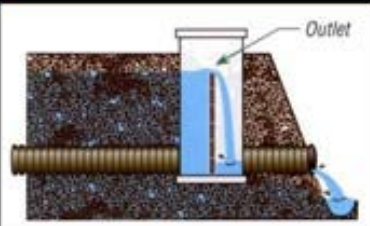
NP211 Program Components (Problem Areas)

1. Effective **Water Management** in Agriculture
2. Erosion, Sedimentation & **Water Quality**
3. Improving **Conservation** Effectiveness
4. Improving **Watershed Management** & Ecosystem Services In Agricultural Landscapes

1. Effective Water Management in Agriculture

Too much water . . .

Controlled-Drainage (CD) Modes



. . . or not enough.

NP211 Program Components

2. Erosion, Sedimentation, and Water Quality Protection

Erosion, Sedimentation, and . . .



Water Quality Protection.

NP211 2011-15 Action Plan Problem Areas

1. Effective Water Management in Agriculture

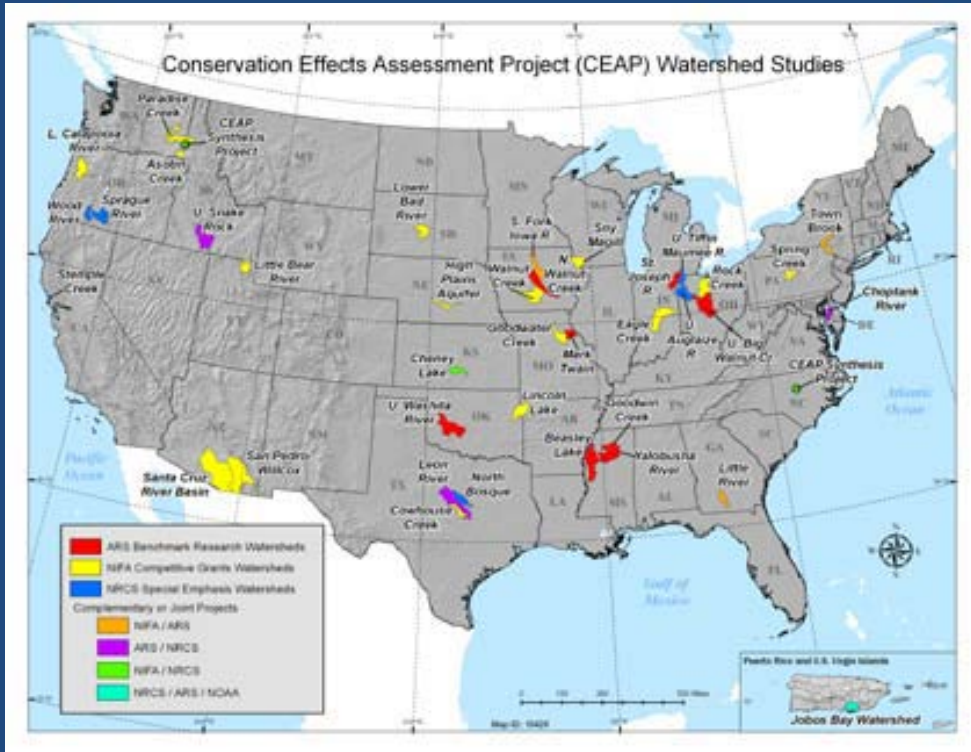
- 1.1 Irrigation Scheduling Technologies for Water Use Efficiency
- 1.2 Water Productivity at Multiple Scales
- 1.3 Irrigation Application Methods
- 1.4 Dryland/Rainfed Water Management
- 1.5 Drainage Water Management and Control
- 1.6 Use of Degraded Waters

2. Erosion, Sedimentation, and Water Quality Protection

- 2.1 Field scale processes controlling contaminant fate and transport
- 2.2 Quantify and predict in-stream processes
- 2.3 Ecological response to improved water quality
- 2.4 Development and testing of cost-effective control measures for agriculture, urban, and turn systems

NP211 Program Components

3. Improving Conservation Effectiveness



Conservation Effects Assessment Project (CEAP) Watersheds.



Riparian forest buffer restoration

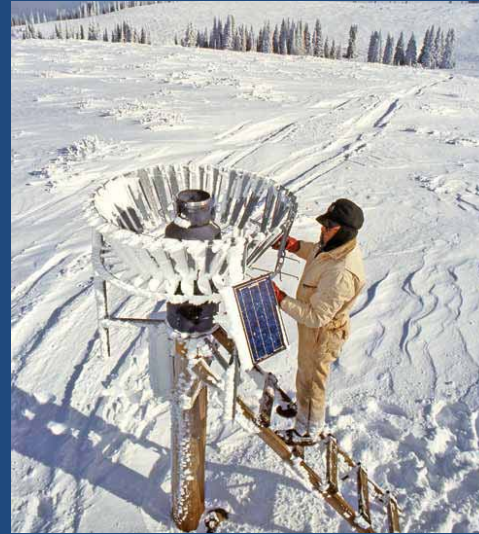
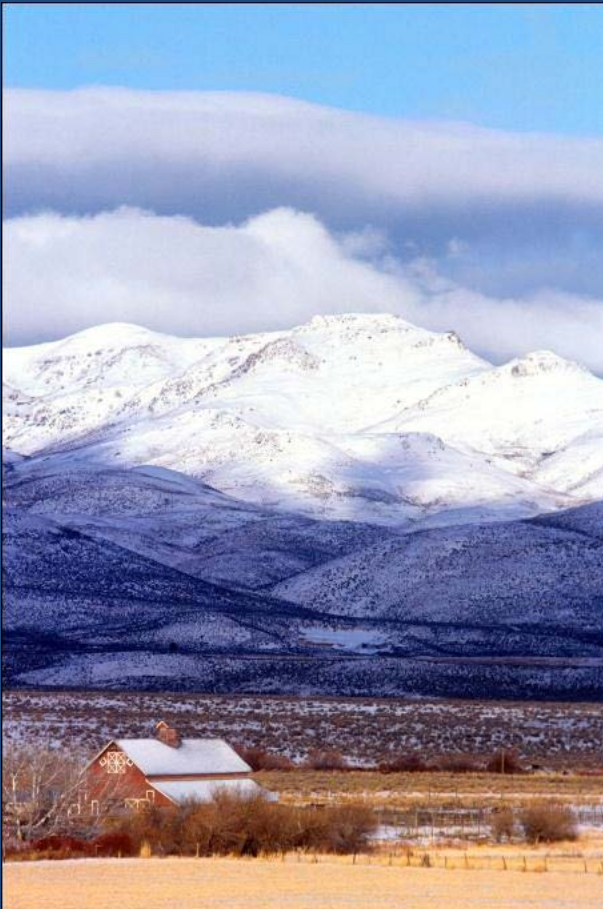


The STEWARDS Data Base

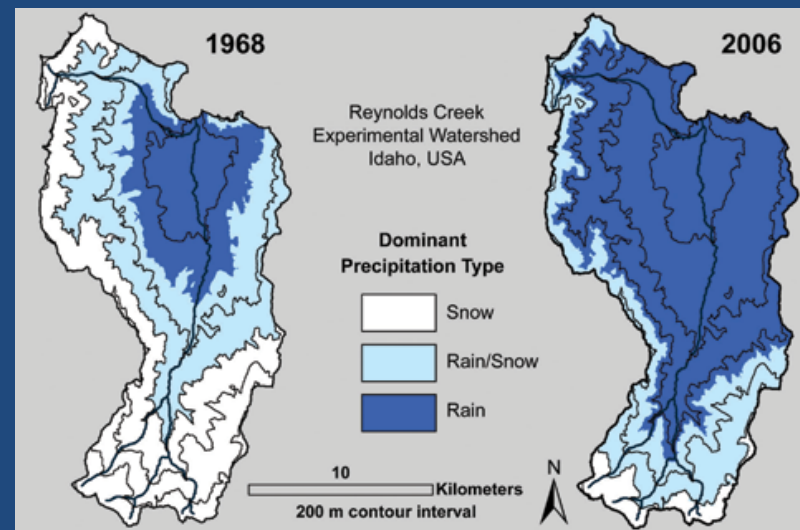
NP211 Program Components

4. Improving Watershed Management and Ecosystem Services in Agricultural Landscapes

In the Reynolds Creek Experimental Watershed . . .



. . . the development of state-of-the-art technologies for estimating snowfall have led to observations that . . .



. . . warming trends mean more rain, less snow at lower elevations.

NP211 2011-15 Action Plan Problem Areas

3. Improving Conservation Effectiveness

- 3.1 Improving our understanding of the aggregate effects of conservation practices at the watershed scale
- 3.1 Improving our ability to select and place conservation practices on the landscape for maximum effectiveness
- 3.3 Improving conservation practices to better protect water resources
- 3.4 Maintaining the effectiveness of conservation practices under changing climate and land use
- 3.5 Understanding how conservation practices affect ecosystem services
- 3.6 Developing a better understanding of the economic impacts and social drivers of conservation practice adoption in agricultural watersheds

4. Improving Watershed Management and Ecosystem Services in Agricultural Landscapes

- 4.1 Developing tools to improve hydrologic assessment and watershed management
- 4.2 Improving watershed management and ecosystem services through long-term observation and characterization of agricultural watersheds and landscapes
- 4.3 Maintaining water availability in a changing global environment
- 4.4 Developing tools to improve the quantification of hydrologic processes and water budget parameters in varying landscapes and under varying conditions
- 4.5 Understanding the water implications of biofuel production
- 4.6 Downscaling climate change impacts to improve water availability and watershed management



United States Department of Agriculture
Research, Education, and Economics

Agricultural Research Service

The Long-Term Agro-Ecosystem Research (LTAR) Network


Dr. Mark R. Walbridge

National Program Leader

Water Availability & Watershed Management Program

LTAR Coordinator



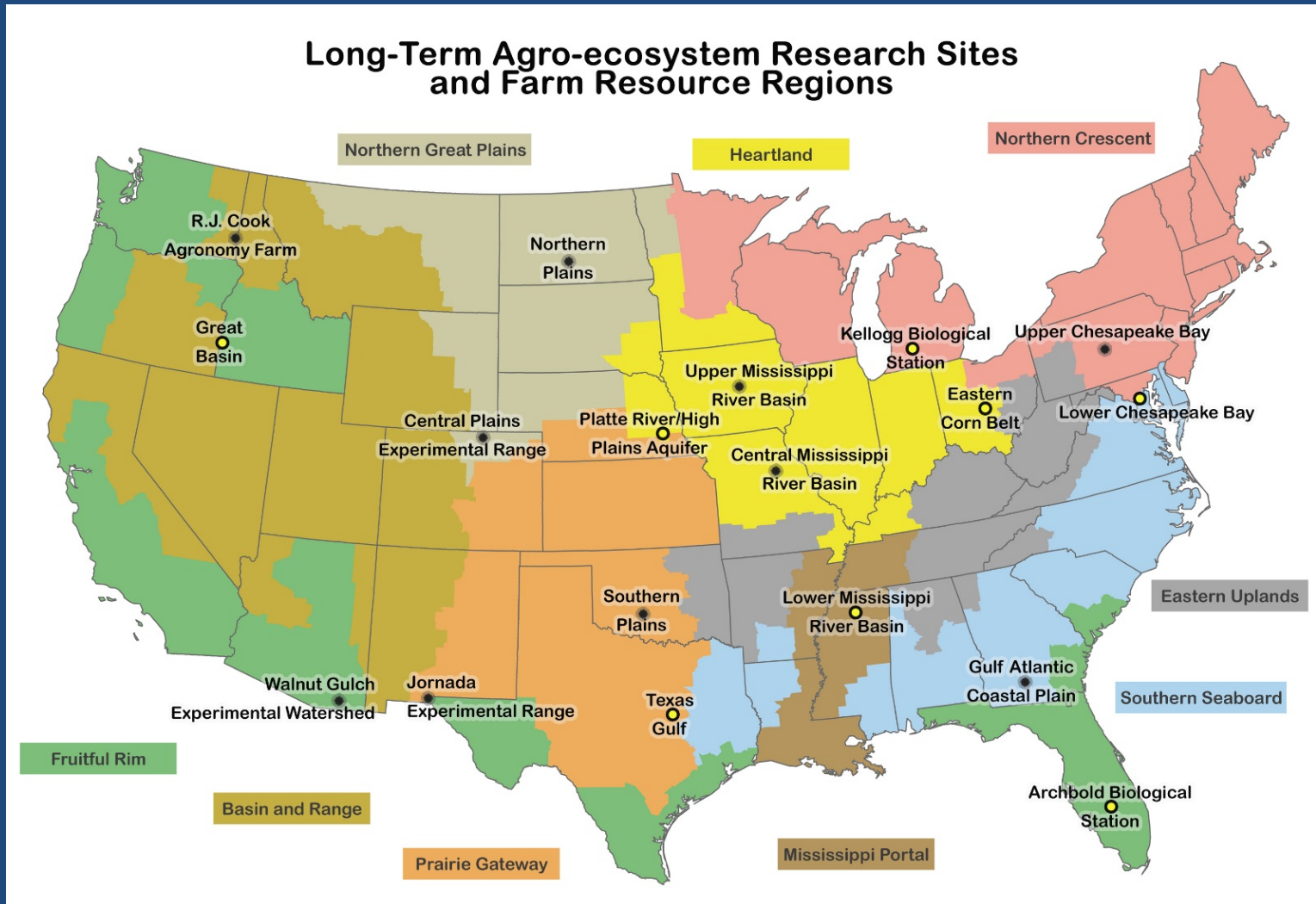


The LTAR network will collect a core set of common measurements to address the central question:

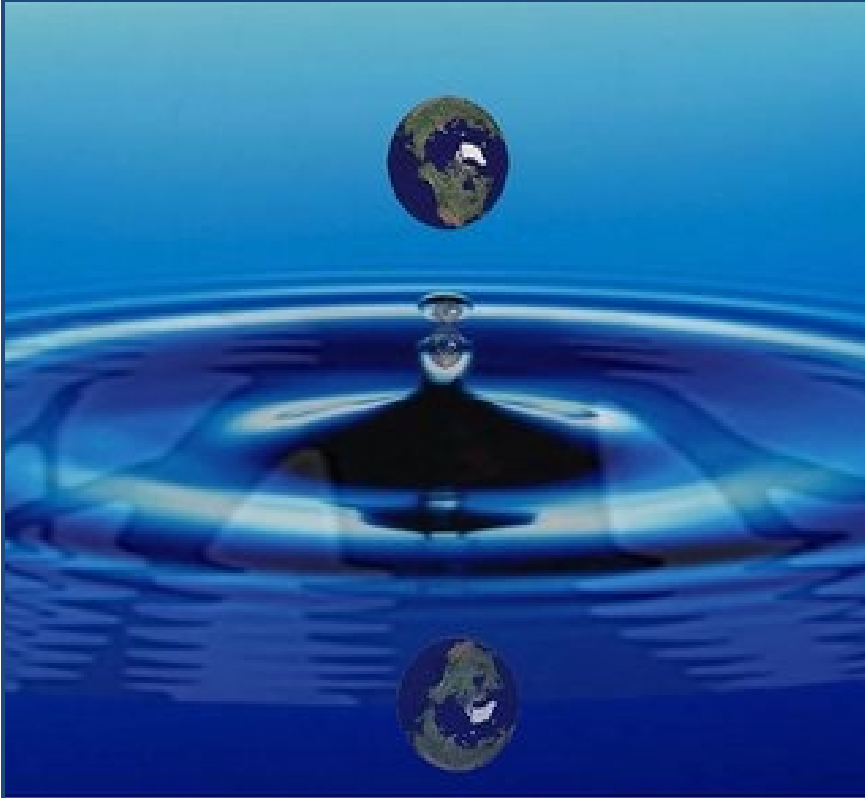
How Do We Sustain or Enhance Productivity, Profitability, and Ecosystem Services in Agro-ecosystems and Agricultural Landscapes?



The Long-Term Agro-ecosystem Research (LTAR) Network



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