



Applying knowledge to improve water quality

Spring 2005
PNWWATER 061

Pacific Northwest

Regional Water Program

A Partnership of USDA CSREES
& Land Grant Colleges and Universities

Agricultural Water Security

As population continues to increase in the USA and around the world, there is an increasing demand for safe, reliable sources of water to meet the needs of the growing population. Farmers, ranchers, and rural communities are particularly susceptible to the growing pressures to provide more water to urban and urbanizing areas at the expense of water supplies in rural and agricultural communities. *Agricultural water security* is defined as the need to maintain adequate water supplies to meet the food and fiber needs of the growing population—maximizing the efficiency of water use by farmers, ranchers, and rural communities.



Drought and the reliability of water supplies for agriculture and rural communities historically have traditionally been linked to western states. However, issues surrounding agricultural water security have expanded beyond western states and now represent a national crisis. For example, water supplies for irrigated agriculture in Georgia, South Carolina, and Florida are being consumed by rapidly expanding urban populations. Shifts in the allocation of these water resources could have dramatic negative impacts on the long-term supply of food and fiber in the USA.

In response to this potential crisis, Interior Secretary Gale A. Norton and Agriculture Secretary Ann M. Veneman signed an agreement in 2003 aimed at promoting improved water management and rapid response to emerging water supply shortages in the West. This agreement highlights the need for expanding the research and education programs focused on better management of water resources. In response to this challenge USDA-CSREES asked Dr. Jim Dobrowolski from Washington State University to work with the agency and develop a strategy to ensure agriculture water security for our future.

Dr. Dobrowolski developed a document that details important research and extension actions that should be taken to address agricultural water security. Concepts and programs identified here would be developed in cooperation with the USDA, Department of Interior, and land grant universities. The summary below highlights a proposed federal budget initiative to address these issues.

What are the research needs in Agricultural Water Security?

There is considerable scientific information regarding the efficient use of water for agricultural irrigation. Similarly, this program will focus on expanding the knowledge base of agricultural water security through research programs aimed at:



Pacific Northwest Regional Water Quality Coordination Project Partners

Land Grant Universities

Alaska

Cooperative Extension Service
Contact Fred Sorensen:
907-786-6311

<http://www.uaf.edu/ces/water/>

University Publications:

<http://www.alaska.edu/uaf/ces/publications/>

Idaho

University of Idaho
Cooperative Extension System
Contact Bob Mahler: 208-885-7025

<http://www.uidaho.edu/wq/wqhome.html>

University Publications:

<http://info.ag.uidaho.edu/Catalog/catalog.html>

Oregon

Oregon State University
Extension Service
Contact Mike Gamroth: 541-737-3316

<http://extension.oregonstate.edu/>

University Publications:

<http://extension.oregonstate.edu/catalog/>

Washington

Washington State University
WSU Extension
Contact Bob Simmons:
360-427-9670 ext. 690

<http://wawater.wsu.edu/>

University Publications:

<http://pubs.wsu.edu/>

Northwest Indian College
Contact Dan Burns:
360-392-4328

dburns@nwic.edu or

<http://www.nwic.edu/>

Water Resource Research Institutes

Water and Environmental Research
Center (Alaska)

<http://www.uaf.edu/water/>

Idaho Water Resources
Research Institute
<http://www.boise.uidaho.edu/>

Institute for Water and
Watersheds (Oregon)
<http://water.oregonstate.edu/>

State of Washington
Water Research Center
<http://www.swwrc.wsu.edu/>

Environmental Protection Agency

EPA, Region 10
The Pacific Northwest
<http://www.epa.gov/r10earth/>

Office of Research and Development,
Corvallis Laboratory
<http://www.epa.gov/wed/>

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- ◆ Risk assessment associated with drought—links to global change
- ◆ Risk management for farmers and ranchers facing impacts of drought
- ◆ Economics of water supply and water conservation
- ◆ The role of water banks—environmental credit trading opportunities
- ◆ Development of drought tolerant or water conserving plant species for agriculture and landscaping
- ◆ Impacts of water reuse on downstream water supplies—does upstream efficiency lead to decreased supply downstream?

What are the education needs in Agricultural Water Security?

Vast amounts of educational materials exist for improving water conservation and water management. Much of this information has not been adapted to local watershed conditions. Moreover, citizens often fail to recognize their role in advancing or threatening agricultural water security. This program will provide outreach and education programs aimed at:

- ◆ Understanding the limits of water supply in western watersheds
- ◆ Improved/expanded application of known/existing science for irrigation and water management through educational programs
- ◆ Place-based education—eliminating sub-tropical lifestyles in desert climates
- ◆ Educating water managers—impacts of water supply will be disproportionately felt by lower income families
- ◆ Educating landscapers—use of drought tolerant trees, reduce/eliminate turf and lawns, use of drip irrigation (instead of sprinklers), reuse of irrigation water
- ◆ Educating residential pool designers—how can we develop pools that serve the recreational need and minimize water losses
- ◆ Educating the public (adults)—public service ads, include water supply as part of the local television/radio weather reports, campaigns to convert toilets and showers to water conserving models
- ◆ Educating the public (youth)—building water conservation as part of the basic curriculum; “waterwise” school programs

How can we best address the research and education needs for Agricultural Water Security?

The USDA has proposed a new \$15 million research and education initiative in support of Agricultural Water Security. The research component of this program will focus on expanding the knowledge base of agricultural water security by exploring solutions to drought, improved water management, and economics of water supply. The outreach/education component of this program will be conducted in cooperation with the Department of Interior. The goal of this component of the program is to educate citizens about the need to conserve water, the importance of water use in agricultural production, and the importance of place-based education for agricultural water security.

National Water Quality Program Areas

The four land grant universities in the Pacific Northwest have aligned our water resource extension and research efforts with eight themes of the USDA’s Cooperative State Research, Education, and Extension System.

1. Animal Waste Management
2. Drinking Water and Human Health
3. Environmental Restoration
4. Nutrient and Pesticide Management
5. Pollution Assessment and Prevention
6. Watershed Management
7. Water Conservation and Management
8. Water Policy and Economics

CSREES is the Cooperative States Research, Education, and Extension Service, a sub-agency of the United States Department of Agriculture, and is the federal partner in this water quality program.