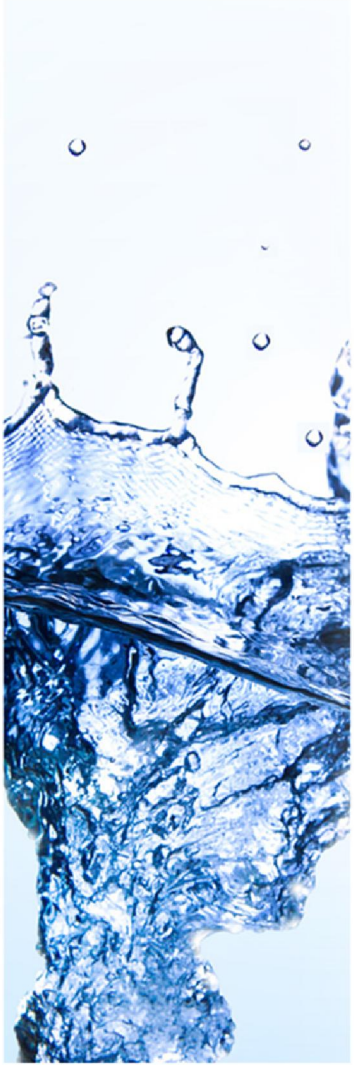


Water Challenges and Opportunities: A USDA-NIFA Perspective

Jim Dobrowolski,
National Program Leader



- NIFA's water science, education and extension/outreach (REE) portfolio engages knowledge and technology, incentives, and policies to promote appropriate decision making at a wide range of scales.
- *The water portfolio* addresses critical water issues such as drought and drought preparedness, excess soil moisture, flooding, availability (quality + quantity) and use, conservation in an agricultural context.



Challenges

- Congressional Appropriations/Budget
- Workforce—deluged with retirements, but backfilling very slowly
- Year-to-year debt
- Identifying appropriate REE priorities



Opportunities: We are collaborating domestically:

National Nanotechnology Science Initiatives:

- Develop alternatives to reverse osmosis technologies for desalination in 5-10 years
- General membrane processes
- Treated water standards
- Real-time water quality measurements and sensors



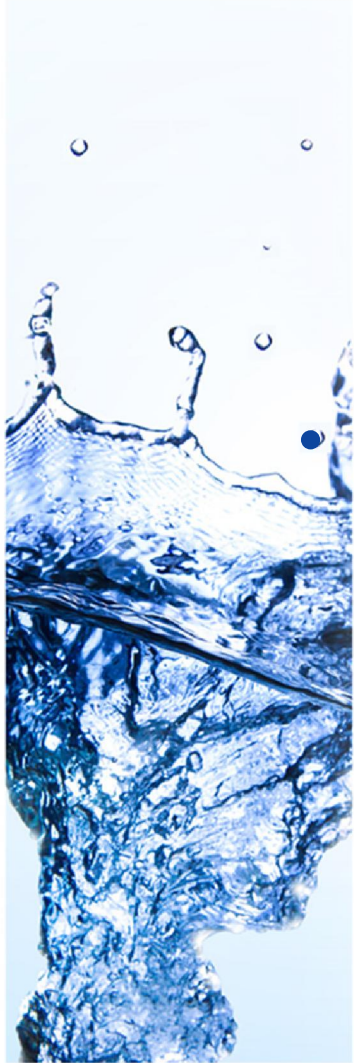


We are collaborating domestically:

National Science Foundation Innovation at the Nexus of Food, Energy and Water (INFEWS):

- The overarching goal of INFEWS is to catalyze the well-integrated interdisciplinary research efforts to transform scientific understanding of the FEW nexus in order to improve system function and management, address system stress, increase resilience, and ensure sustainability





We are collaborating domestically:

Environmental Protection Agency:

- What are the chemical contaminants of human health concern in nontraditional agricultural water, what is the nature and extent of the contaminants, what are the human exposure pathways, what are the health risks associated with nontraditional agricultural water uses, and how might any potential risks be reduced or mitigated?



We are collaborating internationally:

- Integrated work with Israel
 - Newly minted MOU/Link with Water for AG/Water Reuse
- Work with Mexico on trans-boundary issues: Rio Grande



International Boundary & Water Commission
United States and Mexico

United States Section

Est. 1889





Launch of Water for Ag

"Cutting edge research holds the key to tackling the complex challenges posed by prolonged drought and ensuring the future food security of our nation," said Secretary Vilsack. "These grants will help arm America's farmers and ranchers with the tools and strategies they need to adapt and succeed, and build on ongoing, cross-governmental efforts to provide relief to those impacted by severe drought."



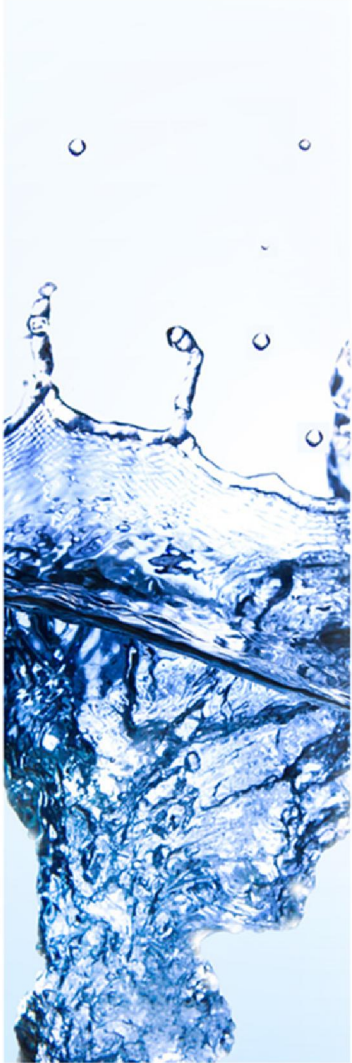
NIFA's Response to the Water for Agriculture Challenge

- Invest in the development of management practices, technologies, and tools
 - for farmers, ranchers, forest owners and managers, public decision-makers, public and private managers and citizens to improve water resource quantity and quality.
- NIFA's approach links social, economic, and behavioral sciences with traditional biophysical sciences and engineering
 - to address regional scale issues with shared hydrological processes, and meteorological and basin characteristics.



Water for Agriculture, Defined

- Focuses on solutions
 - Superior quality and quantity water;
 - Understanding human behavior on decision making for agricultural water use;
 - In agricultural, rural and urbanizing areas across the United States;
- Funds water REE that links food, water, climate, energy, health and environmental issues.



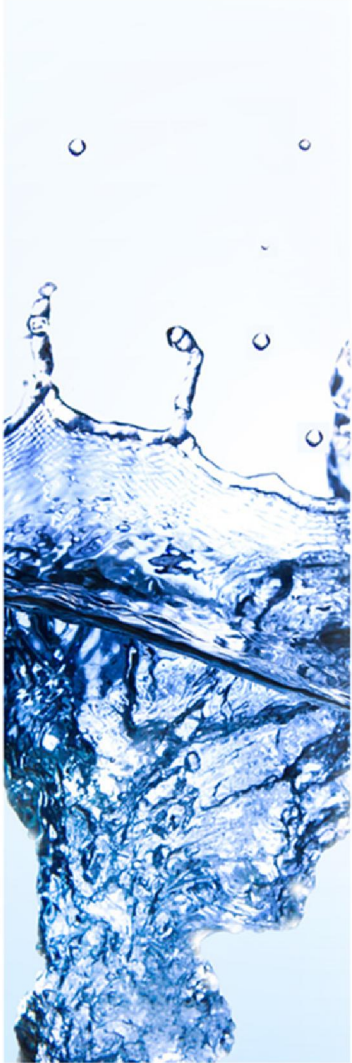
Priorities for FY 2015

- *Water Availability for Diverse Agricultural Uses: The Right Water for the Right Place and Time.*
 - Goal is to conserve water through the development of cost-effective, adoptable and sustainable practices and technologies for agricultural producers and processors;
 - One or two, \$10 M **Integrated** CAP projects over 4 years at the watershed or regional scale.



Priorities for FY 2015

- *Understanding Decisions and Behaviors Connected with Agriculture and Post-harvest Processing Industry Water Use.*
 - Goal is to improve water availability through the understanding of human behavior, the potential for technology adoption and improved decision-making, and give decision makers greater capacity to manage water for agriculture
 - \$500 K **Standard Research** projects at the watershed or regional scale.



Priorities for FY 2015

- *Understanding the Human Health Impacts to Exposure from Nontraditional Water Used in Agriculture.*
 - Goal is to fund a portfolio of research that improves our understanding of the human exposure pathways to nontraditional agricultural water and potential human health risks;
 - NIFA and EPA (U.S. EPA National Center for Environmental Research) collaboration;
 - \$500 K ***Standard Integrated*** projects at the farm or watershed scale.



Priorities are mapped to:

- USDA Strategic Plan

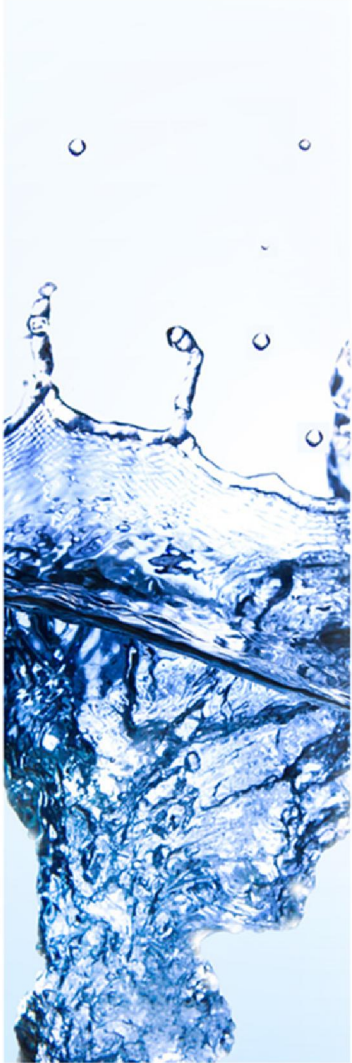
www.ocfo.usda.gov/usdasp/sp2010/sp2010.pdf

- USDA REE Action Plan

www.usda.gov/documents/usda-ree-science-action-plan.pdf

- PCAST Report on the U.S. Research Enterprise and Agricultural Preparedness and the Agricultural Research Enterprise

www.whitehouse.gov/administration/eop/ostp/pcast/



Priorities are mapped to:

- A Science Roadmap for Food and Agriculture/ESCOP/ECOP
- Portfolio Planning Document/IBCE-DoES
- Water and Agriculture In a Changing Climate *Horticultural Science*
(<http://hortsci.ashspublications.org/content/46/2/155.full>)
- Advancing water resource management in agricultural, rural, and urbanizing watersheds: Why land-grant universities matter SWCS
(<http://www.jswconline.org/content/68/4/337.short>)
- AFRI Water Challenge Stakeholder Listening/Input Sessions
 - With our federal, state and local partners

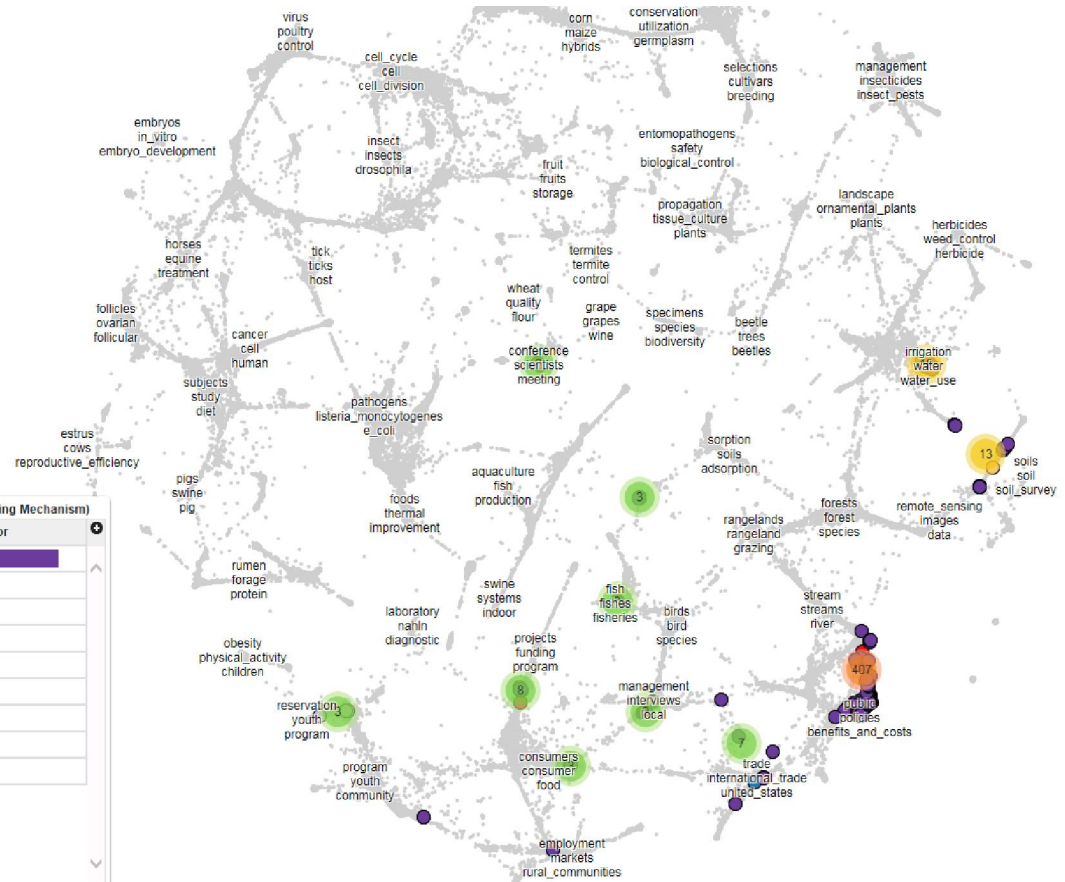
Assessing Water Use



Marker Legend - PTFL (Project Type or Funding Mechanism)

Value	#Awd	Color
HATCH	181	Blue
MCINTIRE-STENNR	15	Orange
OTHER GRANTS	13	Red
SPECIAL GRANT	10	Green
NRI COMPETITIVE	6	Yellow
SERD GRANT	3	Purple
AFRI COMPETITIVE	5	Light Blue
OTHER EXTENSION	1	Light Green
Unknown	1	Light Yellow

Settings
 Legend
 Markers
 Base Map
 Labels
[Help Desk / Customer Support](#)



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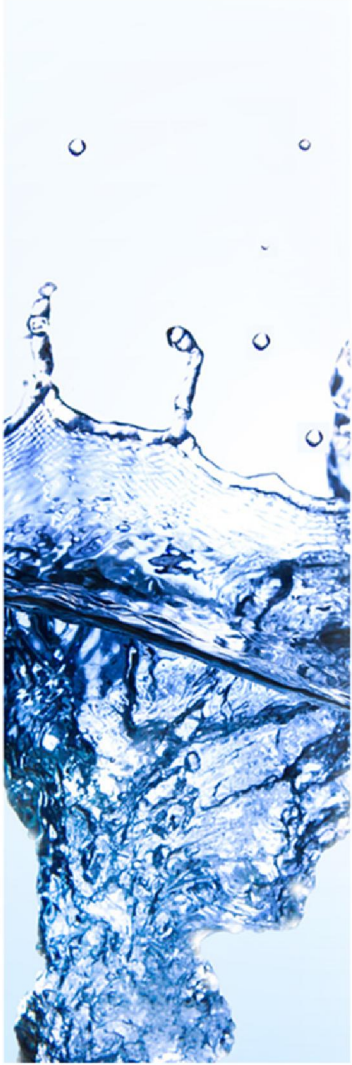
What CAPs Did We Fund in 2014?

- Managing water for increased resiliency of drained agricultural landscape—Purdue
- Developing and promoting water-, nutrient-, and climate-smart technologies to help agricultural systems adapt to climate and societal changes—Michigan State
- Sustainable water resources for irrigated agriculture in a desert river basin facing climate change and competing demands: From characterization to solutions--UTEP

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What CAPs Did We Fund in 2014?

- ThinkWater II: Growing knowledge to solve water problems—U. Wisconsin
- Enhancing climate resiliency and agriculture on American Indian lands of the Great Basin Region—U. Nevada
- Increasing the resilience of agricultural production in the Tennessee and Cumberland river basins through more efficient water resource use—U. Tennessee



Press Release Last Week

- President Obama:

After years of gradual increases in funding, the administration will seek \$700 million for the Agriculture and Food Research Initiative in the fiscal year that begins on Oct. 1, said White House science advisor John Holdren. If approved by Congress, it would double the funding for AFRI.

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Thanks!

NIWR is one of my sources for stakeholder input.

Jim Dobrowolski

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