

# SCIENCE & EDUCATION Impact

Benefits from USDA/Land-Grant Partnership

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## Water Works

Conserving, protecting and reclaiming a key natural resource.

*Despite major improvements in water quality nationwide during the past decade, the issue continues to be one of the most challenging — particularly as demand for clean water increases in both urban and rural areas. Water quality and quantity concerns include the need to increase conservation, reduce pollution and deal with other problems such as drought. For agriculture, water is one of the most critical commodities. To make sure we all have the water we need, Land-Grant universities and the USDA are developing an impressive array of creative, cost-effective measures to use and protect this precious resource.*

### Payoff

- **50 percent off.** Utah is the second driest U.S. state and one of the fastest growing. Based on current estimates for water consumption and population growth, Salt Lake City could “run dry” by 2020. Thanks to **Utah State’s** Water Check Program, residential water users are measuring sprinkler pressure, coverage and water saturation per hour. As a result of the widely publicized extension program, thousands of residents are saving 25 percent on water bills, reducing water consumption by 50 percent and enjoying healthier lawns.
- **Rice is nice.** Land-Grant research and extension programs have helped achieve major reductions in the amount of water used to irrigate rice. **Arkansas** Extension specialists helped farmers use multiple inlet rice irrigation systems, saving 17 million gallons of water for every 40 acres of production. The system reduces labor costs by 35 percent and cuts pumping hours by 33 percent, saving more than \$16 per acre in electricity. **Texas A&M** research helped reduce water use for that state’s rice production by 34 percent. Reduced pumping costs save producers more than \$750,000 annually. **Mississippi State** scientists found that leaving stubble in rice fields after harvest dramatically reduces soil erosion — a major source of water pollution. When stubble is plowed under, fields lose 1,000 pounds of soil per acre, but that’s reduced to 31 pounds when stubble is left in the field. Research at **Louisiana State** produced similar results.

RESEARCH,  
EXTENSION AND  
EDUCATION  
AT WORK

<http://www.reeusda.gov/success/impact.htm>

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- **Waste not.** When the federal government ordered Orlando and Orange County to stop discharging millions of gallons of treated wastewater into a creek, local governments initiated the \$180 million Water Conserv II project to use reclaimed water on citrus, other crops and golf courses. **Florida** Extension signed up growers to use the water, and university researchers are measuring how wastewater helps crops. It's a win-win situation: urban areas get rid of treated wastewater, growers get almost unlimited supplies of free water and the environment is protected.
- **Southwest solution.** Instead of treating wastewater with chemicals, **Arizona** researchers have developed a natural, low-cost way of producing high-quality water. The new system, which is being used in Phoenix as well as Los Angeles and Orange counties in California, filters water through a 122-foot layer of soil — reducing organic compounds, viruses and other harmful compounds by as much as 99.9 percent. The sustainable system won't wear out and replaces conventional treatment plants.
- **Reducing runoff.** By changing diets of dairy cows, **Wisconsin** researchers cut manure-related water pollution by 80 percent. A one-third reduction in dietary phosphorus decreases the nutrient in manure by 50 percent, producing even greater reductions in the amount of phosphorus that ran off fields into lakes and rivers. Overfeeding phosphorus costs dairy farmers \$12 to \$15 per cow each year each year. With 1.3 million cows in the state, farmers could save more than \$16 million annually by adopting these recommendations. **Nebraska** research on beef cattle in feedlots showed similar results.
- **Nixing nitrates.** Soil and water experts in **Delaware** developed cost-effective nutrient management practices to protect water from nitrate and phosphorus contamination without compromising crop yields. During 2000, they demonstrated the value of diagnostic tools and other measures on 32 farms statewide to help protect surface water. Scientists also are showing producers how to use nutrients in poultry litter as a source of fertilizer for crops.
- **No-till.** Because soil erosion can degrade water quality,

**Tennessee** Extension specialists reduced erosion by 3 million tons annually by promoting no-till and residue management programs. At least \$7.5 million in damage has been prevented.

- **Peanut program.** **Georgia** researchers have developed computer programs that give peanut farmers accurate irrigation recommendations and help them reduce water consumption. On fields that use ponds for irrigation, these recommendations saved more than 95,000 gallons of water. Center-pivot irrigated systems saved more than 73,000 gallons of water.
- **On a clear day.** Sandpit lakes are popular for recreation in **Nebraska**, but algae growth can reduce water quality, kill fish and make lakes unusable for recreation. **Nebraska** scientists have developed a nontoxic way to control algae by adding aluminum sulfate to lakes to remove phosphorus as a major algae food source. The new treatment is more effective and environmentally friendly than the traditional treatment, copper sulfate. Applied properly, aluminum sulfate reduces algae growth by 65 percent and increases water clarity by 130 percent.
- **River watch.** The St. Louis River contributes significant amounts of water, nutrients and pollutants to Lake Superior. The river and lake are important to the region's water supply and recreation. To protect the watershed and improve water quality, the **Fond du Lac Tribal and Community College** in Wisconsin is playing a key role in the St. Louis River Watch Program. Since 1997, the college has supported water sampling in the river by students at 21 area schools, training for teachers and data collection. The college also holds an annual conference to measure results and encourage stewardship.



Cooperative State Research, Education,  
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