

# SCIENCE & EDUCATION Impact

Benefits from USDA/Land-Grant Partnership

---

## Water Wonderful World

Safeguarding and enhancing the nation's water resources.

*We may argue over whether all life crawled out of water in the beginning, but the fact that living creatures need ample supplies of water to thrive isn't debatable. And from people in cities to plants in farm fields, the greater the population density, the more precious the water supply. USDA and Land-Grant University System researchers and extension specialists work to safeguard and enhance the quantity and quality of the nation's water resources.*

### Payoff

- **Creatures small.** The Rio Grande silvery minnow is a tiny, endangered fish that lives only in a short stretch of the river that has gone dry at times during recent droughts. Federal courts have approved diverting valuable drinking water to save the minnow when its habitat is threatened. **New Mexico State** researchers are studying the silvery minnow and the hundreds of miles of farm irrigation drains and ditches. They've found silvery minnows in these artificial streams and believe they may provide a viable alternative home for the tiny fish in the future.
- **Waste matters.** The waste from animal feeding operations can dump nutrients into nearby streams, causing water-quality problems downstream. To help stabilize Little Bear River, **Utah State** Extension helped 36 farms build manure-handling facilities that have contained a total of 77,000 tons of manure each year. This effort reduced nitrogen runoff by more than 450 tons and phosphorus by nearly 75 tons, stabilizing more than two miles of stream channel and improving 409 acres of wildlife wetland habitat. **North Carolina A&T** researchers found that sandwiching shallow ponds between strips of marsh plants can reduce nitrogen runoff from livestock facilities by as much as 95 percent. **North Carolina State, South Dakota State, American Samoa,** and other universities had similar programs.
- **Well wells.** Florida gets a lot of rain, which can leach fertilizers and chemicals from crops, lawns, and gardens into rural wells used for drinking water. **Florida A&M** Extension uses a mobile drinking-water lab to test shallow wells on the spot and train residents about the need to monitor their water supplies. A testing program in **Georgia** analyzed 2,700 wells for bacteria and 200 more for a spectrum of chemicals and added workshops and other efforts to educate more than 4,000 people on

**RESEARCH,  
EXTENSION AND  
EDUCATION  
AT WORK**

Search for more at <http://www.csrees.usda.gov/impact>

# SCIENCE & EDUCATION Impact

## Benefits from USDA/Land-Grant Partnership

water testing. **Nebraska** and **Nevada** scientists tested small public water systems and private wells for arsenic, another common problem in groundwater supplies, and Nebraska scientists are researching lower-cost ways to remove arsenic. **Missouri** researchers tested more than 1,100 water samples for chemical pollution and found only 7 percent had detectable levels and none had health-threatening levels. **Colorado State** Extension has sampled more than 1,000 wells and detected unsafe pesticide levels in only four after years of developing and promoting best management practices for chemical use.

- **Water use.** Utah is near the top of two conflicting lists: it's the second driest state in the nation, and its per-capita water use is nearly the nation's highest. **Utah State** Extension responded with water audits and training on irrigation scheduling, enabling 70 large water users to reduce their water use up to 28 percent each year. These water users saved more than 66 million gallons of water, enough to fill the university's football stadium and create a column of water 203 feet high. **Georgia** Extension worked to install end-gun shut-offs on center-pivot irrigation rigs and saved 6.9 million gallons of water in one county alone. More important, Georgia researchers and extension specialists are monitoring 4 percent of the state's 4,360 wells used to irrigate crops. The data from the irrigation monitoring will help the state better manage its water resources. The **University of Arkansas-Pine Bluff** participates with several agencies in a similar monitoring program.
- **Water, water, everywhere.** Supplies of undrinkable water evoke scary thoughts in coastal areas where overuse of groundwater is causing salty ocean water to seep into urban water supplies. A **Georgia** researcher developed a computer program that can be used to solve seawater intrusion problems in coastal aquifers in places like the Georgia coast, Cape Cod, Puerto Rico, and the Netherlands.
- **Citizens attest.** There aren't enough scientists to monitor and protect our water resources everywhere. Local communities need to join the effort. **Alabama** Extension designed the Alabama Water Watch program to train citizen volunteers to monitor surface water quality in their area. Extension put together a portable

water-quality test kit so anyone with the training can collect valid water-quality data. With more than 75 active community groups statewide now, this program is a model for many other states and countries. **Rhode Island** Extension, for instance, has trained 250 volunteers who provide more than 90 percent of the water-quality data for the state's lakes, ponds, rivers, and coastal watersheds.

- **Crystal clear.** Few places show water quality degradation as clearly as Lake Tahoe, which has been losing its world-renowned clarity at an alarming rate since urban development began in the 1960s. Visibility in the lake was 102 feet when **California** scientists began measuring the lake's water clarity in 1968 but dropped to only 64 feet in 1997. **Nevada** Extension and California Extension joined with 30 agencies in a massive educational campaign to address the problem. The coalition produces weekly television, radio, and newspaper reports. It has staged more than 50 educational events, such as a program on citizen water quality monitoring and a workshop for contractors on erosion control and best management practices. The efforts seem to be paying off. In 2002, Lake Tahoe's water clarity averaged 78 feet for the year, the best since 1992.



**Cooperative State Research, Education,  
and Extension Service**  
United States Department of Agriculture

Cooperative State Research, Education, and Extension Service in cooperation with the Extension Committee on Organization and Policy, the Experiment Station Committee on Organization and Policy, the Academic Programs Committee on Organization and Policy, the International Programs Committee on Organization and Policy, and the Louisiana State University Agricultural Center.

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.)