

## Study Compares Turf Water Needs

*Contributed by Dan Smeal, NMSU Agricultural Science Center, Farmington*

Turf irrigation in urban landscapes accounts for up to 50 percent of summer domestic water use in the arid Southwest. By selecting drought-tolerant turfgrass species and by carefully scheduling irrigations based on plant water needs, an acceptable turf can be maintained while conserving water.

With funding provided by the U.S. Bureau of Reclamation and the New Mexico Office of the State Engineer, a study was conducted in 1998 and 1999 by New Mexico State University to identify the water requirements of various cool season (bluegrass, perennial ryegrass and tall fescue) and warm season (buffalograss, blue grama and bermudagrass) turfgrasses. Water amounts, ranging from deficit to excessive levels, were applied to each grass throughout the growing season at the Agricultural Science Center at Farmington. The turfs'

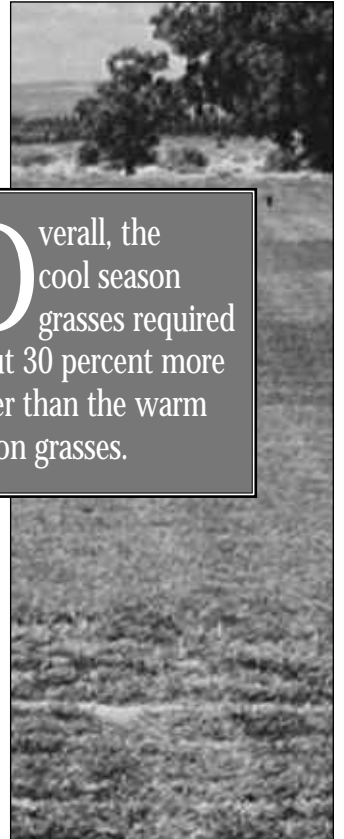
response to each watering level was evaluated by independent judges or research personnel during the season by rating turf color, density, uniformity, blade texture, etc.

Overall, the cool season grasses required about 30 percent more water than the warm season grasses (36 inches vs. 24 inches) to maintain an acceptable appearance. Peak daily water use rates averaged 0.22 inches in June and early July in the cool season grasses and 0.19 inches in late July in the warm season grasses. Prolonged drought drastically affected the cool season grasses, whereas the warm season grasses were only slightly affected. This should be an important consideration in New Mexico where water use restrictions in urban environments during droughts are becoming more common.

In addition to using less water, the bermudagrasses and buffalograsses required less maintenance. Due to slower growth rates, the bermuda grasses required much less mowing than the cool season turfs, and the buffalograsses had lower fertilizer requirements. Additionally, while the warm season grasses did not appear to have any pest problems during the study period, fungicide and insecticide applications were required in the bluegrasses to control disease symptoms and grub damage.

Turfgrass water requirements will vary daily and seasonally due to variations in air temperature, humidity, solar radiation and wind. Consequently, the water use rates measured at Farmington were correlated with daily weather parameters to

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*Warm season turf showing all of the varieties and irrigation levels.*

develop a seasonal crop-coefficient for each grass. These crop-coefficients were used to develop an irrigation scheduling program that turf managers throughout the state can use to increase landscape water use efficiency. The program is linked to the New Mexico Climate Center website at <http://weather.nmsu.edu/>.



*Juan County master gardeners watering the cool season turf plot.*

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# Fall a Busy Time for Water Events

Fall has traditionally been a time of celebration, and the water community is no exception. Several cities across the state have sponsored water festivals and other events to celebrate the life that water brings. As a result, thousands of New Mexico residents have received information on water issues, including water conservation.

## **Water Conservation Solutions Expo 2000 Las Vegas, NM September 7-9, 2000**

The city of Las Vegas co-sponsored this three-day event with the U.S. Bureau of Reclamation and Tierra y Montes Soil and Water Conservation District. The first day was directed at local schools, and over 300 students participated. The second and third days were aimed at businesses and the general public. Free water testing was offered by the New Mexico Environment Department, and free indoor water conservation kits (low-flow showerheads, faucets, aerators and toilet leak detectors) were also made available.

## **Make a Splash with Project WET Santa Ana Pueblo, NM September 21, 2000**

The Santa Ana Pueblo was the only Native American group to participate in the national Make a Splash with Project WET day. The event, held in all 50 states, was co-sponsored by the Perrier Group and Project WET USA. Approximately 600 students, teachers, and Native Americans participated in water activities at the pueblo. Highlights included free xeriscape plants from Santa Ana nursery, activities from Project WET, a visit from the Water Wizard, and songs and dances from the Native American residents.

## **Tri-City Water Festival Las Cruces, NM; El Paso, TX; and Ciudad Juárez, Chihuahua, Mexico • October 13, 17 and 19, 2000**

Reaching over 10,000 students, teachers, and members of the public, the Tri-City Water Festival spent one day in October in each of the three cities. Students received educational materials and promotional items to help them conserve water. The event was sponsored by WERC.

## **Painting the Desert with Plants Xeriscape Conference Albuquerque, NM • October 20-21, 2000**

Held at the Albuquerque Convention Center, this year's regional xeriscape conference attracted over 250 professional landscapers, local government officials, homeowners, and others interested in water-efficient landscaping. Conference participants, who came from neighboring states as well as New Mexico, enjoyed two days of presentations on native plants, xeriscape economics, efficient irrigation practices, permaculture, and global irrigation issues, while visiting exhibits featuring water-efficient products, programs and educational materials.



*A Native American musician entertains children at Santa Ana Pueblo.*

# Workshop Goes Boldly Forward

If you'd like to find out about the latest in water conservation technology and policy – and what the future holds for them – plan on attending ***A Conservation Odyssey – Innovations to Take Us Boldly Forward***, a water conservation workshop to be held early next February in Portland, Oregon. There will also be a half-day session entitled ***Welcome to the Conservation Force*** for those who are new to the water conservation profession, as well as for those who want to brush up on conservation fundamentals.

The workshops are sponsored by the Water Conservation Division of the American Water Works Association, which will also hold meetings after the workshops. These meetings provide an excellent opportunity to network with water conservation professionals from across the country. For more information, call 1-800-926-7337 or register online at [www.awwa.org/01conserv](http://www.awwa.org/01conserv).



## **Children's Water Festival 2000 Albuquerque, NM November 2-3, 2000**

The second annual Albuquerque Children's Water Festival targeted 1,000 fourth-grade students from Albuquerque, Rio Rancho, and Los Lunas. Students were given the opportunity to participate in hands-on activities including *Cool Bugs in the Water*, *The Rolling River*, and *Map Your Watershed*. The event was sponsored through donations from government agencies, non-profits, and local businesses.

# The Summer of 2000: Drought

Many New Mexico communities suffered significantly from this year's drought, as did communities across the United States and the world. Two of the hardest hit were Santa Fe and Las Vegas.

Driving through Santa Fe this summer, one could see the effects of the hot, dry weather. Numerous trees and shrubs at residences, state office buildings and commercial developments were drought stressed, dying or already dead. While its reservoirs shrank to about 20 percent of normal, Santa Fe increased the pumping of its groundwater wells and imposed heavy water use restrictions in order to keep pace with community water demands. Homeowners and business owners could water landscapes only once a week, and no new landscaping was allowed. The city has extended the restrictions into the fall.

In Las Vegas, another surface-water supplied community, all outdoor watering was banned at least twice during the summer, and that ban remains in effect this fall. In addition to not having enough water to meet high demands, the city's water supply was threatened by erosion from wildfires in its forested watershed, and citizens had to deal with taste and

odor problems caused by algal growth in the water.

During the summer, a number of other New Mexico communities imposed less restrictive water use requirements, such as alternate-day and time-of-day outdoor watering schedules to curb peak water demands. Across the South, Southwest, Midwest and West, communities also struggled with drought impacts.

In Texas, 159 towns and cities implemented water use restrictions. The city of Abilene limited lawn watering to once every two weeks; Austin residents faced fines of up to \$2,000 for disobeying water use regulations; and Houston's water use reached 80 percent of the city's daily capacity. The small town of Throckmorton, Texas gained national attention when it had to lay a 22-mile emergency pipeline to obtain water from a neighboring city, doing so with a crew of 100 volunteers in temperatures above 100 degrees.

Pinewood Springs, Colorado resorted to buying water from a neighboring town, paying \$1,400 per month for 35,000 gallons of water. The water was hauled four times a day in a 6,000-gallon tanker truck. The Southwest Florida Water Manage-

ment District restricted residents of 16 counties to watering once a week; and Cary, North Carolina banned all watering of non-residential grass and lawns. Sinkholes, caused by land subsidence attributed to the drought, gobbled up at least two homes near Orlando and Tampa, Florida.

Around the world, residents in several countries fared much worse. In a West Bank community, residents had to haul water in buckets from a well to do laundry, as a regional water shortage there became part of the Middle East peace talks. Citizens in a half dozen villages in India rioted after weeks without power and water. And the worst drought in 30 years ravaged the southern and central parts of Afghanistan.

The National Drought Mitigation Center at the University of Nebraska-Lincoln estimates that, on the average, drought costs the U.S. economy from \$7 billion to \$9 billion a year. Forecasters are predicting some relief from the drought in the Midwest and South this fall, but say the Southeast and at least part of the Southwest should experience continued drought conditions.

## Alliance Participates in Conference

Several Alliance members participated in a panel session hosted by the Alliance at the Fourth Annual Water Conservation Conference held in September by New Mexico State University.

Jean Witherspoon, water conservation officer for Albuquerque, discussed the conservation programs that the city has developed and how they are helping the community reach its goal of a 30 percent reduction in water use. Colleen Logan, from the neighboring city of Rio Rancho, described some of the new conservation projects in that community, including a

xeriscape demonstration garden and toilet rebate program.

Next, Darell Rogers, water conservation officer for Sandia Laboratories, reviewed a number of conservation projects Sandia has initiated and detailed the amount of water and money saved through each effort. Lonnie Burke, from Presbyterian Healthcare Services, demonstrated some nuts-and-bolts examples of how a facility can save water through low-tech solutions and employee education. Alice Darilek of the New Mexico Office of the State Engineer moderated the session.



*Jean Witherspoon describes Albuquerque's water conservation program.*

# Restoring the Bosque May Save the Rio

Competition for the waters of the Rio Grande is fierce among the agricultural, urban, recreational and wildlife interests of the three states and two nations who share this resource. While most users have to defend their interests through careful negotiations, one user, the salt cedar, has managed to take an enormous share of river water by simply being there. Brought to North America as a decorative shrub, it now dominates thousands of acres of riverside in New Mexico.

At a recent meeting of the New Mexico Water Conservation Alliance, Paul Tashjian of the U. S. Fish and Wildlife Service told members that releasing the Rio Grande bosque from the grip of phreatophytes like salt cedar promises significant benefits. According to Tashjian, continuing studies are showing that such phreatophytes use much more shallow groundwater than native vegeta-

tion and even some crops. For example, the studies indicate that salt cedar uses more than twice the water of native cottonwoods.

Another effect of phreatophyte proliferation has been narrowing of the river channel. The dense mass of plants traps sediment and debris, building up the banks and encroaching on the channel. According to Tashjian, this change in the river channel is one reason the Rio Grande silvery minnow is endangered. The minnow's preferred habitat is broad, shallow, braided reaches with shaded banks and quiet backwaters. Tashjian pointed out that adding more water to a narrow, steep-sided, fast flowing river channel will not help the silvery minnow survive and reproduce.

A pilot project at Bosque del Apache wildlife refuge is testing the benefits of bosque restoration by clearing salt cedar



from 4,100 acres of refuge land and encouraging the restoration of native bosque species. River and groundwater measurements will be made to determine what effect bosque restoration has on river flows.

The results of the project are crucial. Tashjian notes that there are voices calling for the complete channelization of the Rio Grande to remove consumption by riparian vegetation from the water budget altogether. If the expected savings from bosque restoration can be realized, he said such pressures should be greatly reduced.



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To add a name to the Current mailing list, or to find out more about the Alliance, write to the return address listed above or call 1-800-WATER-NM. The Current can also be found on the following web site: <http://wri.nmsu.edu>.