



SoCal Salinity News

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Turfgrass Establishment with Saline Irrigation

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NEW MEXICO STATE UNIVERSITY

Despite the economic importance and continued public demand for more turf areas, current potable water shortages in the southwestern United States clearly set limits on the water consumption available for non-essential turf irrigation. To reduce the amount of potable water used in landscape irrigation as part of a water conservation plan, effluent water and/or low-quality groundwater that do not meet standards for human consumption could be used. An estimated 75 percent of the groundwater in New Mexico is saline or brackish and is currently considered unusable for human consumption; however, these water sources could potentially be used for turf irrigation, if appropriate salt-tolerant turf species and cultivars were available.

A long-term study is underway at New Mexico State University to investigate the establishment, sustainability, and quality of 21 cool- and warm-season grasses in the southwestern desert when irrigated with saline water. Grasses included in the study are alkaligrass, perennial ryegrass, hybrid Texas bluegrass, tall fescue, fine fescue, bermudagrass, buffalograss, zoysiagrass, seashore paspalum, and inland saltgrass. Given the delayed development and growth of turfgrasses when irrigated with saline water, the study was designed to determine if the growing season in the arid southwest (plant hardiness zone 8) is long enough for turfgrasses irrigated with saline water to establish, survive winter, and maintain acceptable quality. In addition, the effect of saline water in combination with different irrigation

types (sprinkler or subsurface drip) on the establishment and quality of warm- and cool-season grasses was assessed.

Irrigation water is applied at either 0.6 to 1.2 deciSiemens per meter (dS/m) (potable water), 3.1 to 5.0 dS/m (high saline water), or 2.0 to 3.0 dS/m (50/50 blended mix). The subsurface drip system consists of a porous, emitterless pipe allowing water to move through the walls along the entire length of the pipe. All plots were fertilized and irrigated to prevent nutrient deficiencies and drought stress. After the establishment of the turf plots, mowing at 2.5 inches was applied twice per week.

In general, water quality was a major factor in the speed of establishment. High saline water significantly delayed and reduced the establishment rate for most species when compared to potable and 50/50 water. Of the cool-season grasses, alkaligrass established best for all three water qualities. The tall fescues, perennial ryegrasses, and Dawson fine fescue showed acceptable establishment for the potable and 50/50 water qualities. Hybrid Texas bluegrasses had the poorest coverage of all grasses. For the warm-season grasses, the seashore paspalums performed the best, followed by bermudagrasses. Salinity did not harm the saltgrasses; however, they were slow to establish, possibly due to limited plant material during the initial transplant. In 2005, saltgrasses have shown earliest spring green-up among warm-season grasses, while both buffalograss and zoysiagrass established to less than 10-percent ground coverage in 5 months when irrigated with saline water.

Conclusions

- Salinity reduced the establishment rate for all tested cool-season grasses. Salinity did not affect the establishment rate of the warm-season grasses seashore paspalum, bermudagrass, and inland saltgrass. Salt-tolerant turfgrasses such as alkaligrass, seashore paspalum, bermudagrass, and saltgrass can be successfully established with high-saline groundwater.
- The establishment rate did not differ significantly between irrigation systems (subsurface drip versus sprinkler) when saline water was used.
- Differences in salinity tolerance can be greater between cultivars within a single species than previously reported among species. More work must be done to identify salt-tolerant cultivars.
- Sprinkler irrigation with potable water may be the easiest way

Please see TURFGRASS on page 2

DON'T MISS THE UPCOMING SALINITY SEMINAR SERIES!

The Southern California Salinity Coalition will introduce a new program this fall titled the "Salinity Seminar Series," which is designed to acquaint Southern Californians with key salinity issues and to explore solutions based on current research from throughout the nation. Scheduled for mid-October, the first seminar will feature Dr. Bernd Leinauer from New Mexico State University, who will present the results of his research in establishing turfgrass with saline groundwater.

For more information, please visit www.NWRI-USA.org.

Deadline for Salinity Coalition Fellowship Is Aug. 8

The Southern California Salinity Coalition is pleased to announce the establishment of a graduate Fellowship that will support research to address critical salinity issues impacting Southern California. The Fellowship is available to graduate students in good standing from any academic institution located in Southern California (defined as the region between Santa Barbara in the north to San Diego in the south, and extending to the border with Arizona and Nevada).

Examples of the Coalition's research interest include:

- Brine management.
- Institutional and regulatory issues that inhibit salinity research and development.
- Economics of reducing or maintaining salinity levels.

- Innovative treatment technologies not based on salt regeneration.
- Regional and watershed planning to reach an acceptable salt balance.
- Public education.

The Fellowship will provide a \$10,000 annual award, which can be renewed for up to 3 years upon successful annual progress towards the completion of a master's or doctoral degree.

The application process can be found on the National Water Research Institute's website, www.NWRI-USA.org, under Salinity Coalition.

The deadline for applications is August 8, 2005.

Officers Elected to SoCal Salinity Coalition Board

Congratulations to the following individuals, who were elected or reelected as officers on the Board of Directors for the Southern California Salinity Coalition.

President:

Rich Atwater, *Inland Empire Utilities Agency*

Rich Atwater has over 25 years experience in water resources management and development in the western United States. Since 1999, he has been CEO/General Manager of the Inland Empire Utilities Agency, which provides wholesale water and wastewater utility services to over 700,000 customers in the Inland Empire, California. He has also been President of the Board of Directors for the Southern California Salinity Coalition since its inception in 2002.



water quality improvements for Lake Elsinore and the San Jacinto River Watershed. He has also served as an Alternate Director on the Board of Directors for the Southern California Salinity Coalition since its inception in 2002.

Secretary-Treasurer:

Virginia Grebbien, *Orange County Water District*

With over 20 years of experience as a Professional Engineer, Virginia Grebbien is well known in the field of water resources management and planning throughout the State of California. In 2002, she became General Manager of the Orange County Water District, an agency that manages and maintains the groundwater basin in Orange County, California. She has also been Secretary-Treasurer of the Board of Directors for the Southern California Salinity Coalition since its inception in 2002.



Vice President:

Mark Norton, *Santa Ana Watershed Project Authority*

Mark Norton is a civil engineer with 25 years of experience in a broad range of projects. He currently serves as the Water Resources and Planning Manager for the Santa Ana Watershed Project Authority, a joint powers agency organized to protect water resources in the Santa Ana River Watershed. In addition, he is the General Manager for the Lake Elsinore and San Jacinto Watersheds Authority, a separate joint powers agency designed to enhance



Turfgrass Research

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to establish and grow turf; however, to secure the future of the turf industry in the southwest, alternative combinations of water quality, irrigation methods, and species/cultivar selection will have to be considered.

For more information, please visit <http://turf.nmsu.edu> or contact Bernd Leinauer at (505) 646-2546 or leinauer@nmsu.edu.

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