

NMSU Extension turf specialist helps New Mexico golf courses save water

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SANTA FE – Drought conditions and water shortages are having an impact on all sectors of society, including recreational landscape areas. In arid and semi-arid environments across the Southwest, the golf industry is trying to find ways to conserve water while maintaining playability and course quality.



Bernd Leinauer, NMSU Extension turf specialist, right, attaches two subsurface drip irrigation lines as Matteo Serena, NMSU research assistant professor, assists. They directed the installation of one of the first golf course tee box subsurface drip irrigation systems at The Club at Las Campanas in Santa Fe. They will compare two commercial drip systems to a traditional sprinkler system for water efficiency and turf quality. (NMSU photo by Jane Moorman)

For the past five years, The Club at Las Campanas, a luxury golf community in Santa Fe, has been working on implementing water conservation strategies for its two 18-hole courses, designed by golf pro Jack Nicklaus.

Recently, club management turned to New Mexico State University's Cooperative Extension Service turf specialist Bernd Leinauer in Las Cruces for suggestions on how to resolve a lingering issue.

"In addition to using effluent water, we have reduced the amount of turf on the courses by a third, redesigned and updated the irrigation system and started using wetting agents to help conserve water," said Tom Egelhoff, director of agronomy at Las Campanas. "However, we are still battling wasting water on the tee boxes."

The main problem when irrigating the relatively small area of turf on a tee box with sprinklers is that the water overshoots the area or is blown in the wind, causing it to water the desert around the tee box, which not only wastes water, but increases labor costs as plants start to grow in a much larger area.

Leinauer's advice was to use subsurface drip irrigation for the tee box turf.

"Subsurface drip irrigation can save water from 20 to 90 percent of what is used by sprinkler systems," Leinauer said.

“It is not yet economical to use this method for the fairways or greens, but is perfect for tee boxes,” he said. “Las Campanas is one of the first golf courses in the nation to install this type of system in tee boxes.”

Las Campanas is collaborating with NMSU, the United States Golf Association and irrigation system manufacturers Toro and Rain Bird to install subsurface drip irrigation on six tee boxes. The manufacturers each donated the materials for their systems. USGA awarded a grant to off-set the travel cost to install the system and collect research data.

Leinauer and his colleagues, Elena Sevostianova and Matteo Serena, spent one week at Las Campanas to assist Joel Krause, irrigation superintendent, and his crew with installation of the subsurface drip systems.

“We installed Toro and Rain Bird systems in three tee boxes each,” said Leinauer. “We will collect real world data on water consumption and quality of turf in these boxes compared to a standard sprinkler system.”

Drip lines with emitters 12 inches apart have been installed four inches below the turf at one-foot intervals across the tee box area.

“This system is fairly new for turf areas,” Leinauer said. “However in the irrigation industry, it is not new at all. We’ve had subsurface drip irrigated agricultural fields for decades. It’s been shown numerous times that this system delivers water efficiently.”

While it is not yet practical to have subsurface systems in the fairway and greens, it has been used on bunkers where the slope does not allow water from sprinklers to infiltrate the soil, according to Brian Whitlark, an agronomist with USGA Green Section who assisted with the project.

“Because of the data that will be gathered from this project, USGA awarded NMSU a grant to aid the research,” Whitlark said. “USGA supports about a million dollars in research across the country each year.”

Both Toro and Rain Bird are working to identify new technologies that allow more effective and efficient irrigation management.

“Collaborative projects with a university like this one are important to us,” said Joshua Friell, principal research scientist at Toro’s Center for Advanced Turf Technology. “It allows us to have a third-party verification of the technology and the resulting water savings.”

“I hope that we will be able to get meaningful results from this field test and we will be able to document significant water savings, which then can also be implemented on other golf courses across the world,” said Samir Shah, Rain Bird marketing and international sales manager.