



Count on it.

TORO® TURF GUARD® WIRELESS SOIL MONITORING SYSTEM



Protect and improve your course by knowing what it needs.





Gain better control of the water you apply. And the results it delivers.

■ If you frequently deal with irrigation issues—whether about water quality, cost, efficient distribution, runoff or other problems—you're not alone. Superintendents and turf professionals everywhere have water challenges, and in some parts of the country, there are even legal restrictions on its usage. Golf courses are high-visibility targets when communities start questioning water consumption.

To help ensure long-term viability, the turf industry must proactively rely on advanced technology and smarter practices to use water more precisely and efficiently. Precision irrigation means applying water only where it's needed, when it's needed and in the right amounts. In addition to efficient water usage, precision irrigation also helps maintain course conditions at optimal playability.

Because the soil's texture and composition determine how much water the profile can store, and because a golf course's

topography dictates whether water stays where it falls or runs off, a lot of information is needed to achieve precise irrigation and optimum growing conditions. In addition to a solid understanding of soil variability, you have to measure subsurface moisture levels continuously.

An easy way to gain that knowledge is with the Toro® Turf Guard® wireless soil monitoring system, and superintendents who have used it understand the benefits of Turf Guard.

“ I think it's a very good tool. I access it and can tell whether I need to irrigate, and I can keep track of the moisture. I feel more comfortable with it. ”

– Jim Nicol, Superintendent
Hazeltime National Golf Club; Chaska, Minnesota



Turf Guard® Sensor



Turf Guard® taps into your subsoil, and golfers never even know.

■ The Toro Turf Guard monitoring system uses an integrated network of wireless, underground sensors to constantly tell you exactly when you need to water each part of your course.

Because Turf Guard sensors transmit data wirelessly, you avoid having to dig up greens, fairways or other critical areas of your course. Turf Guard is very high tech, but a simple concept:

- Special sensors continually monitor subsoil moisture volume plus salt content and temperature.
- Measurements are taken at two depths, five inches apart.
- Data from two depths can track water/salt movement and soil dry-down through the root zone.

- Strategically placing the sensors allows for variations in slope, shade, etc. in any area of your course.
- The sensors transmit data every five minutes so you have access to current soil conditions.

“ I can click on my computer and learn what’s going on in the profile of the green without having to disrupt my green to learn it. ”

– Jeff Comer, Superintendent
Avondale Golf Club; Palm Desert, California



When your turfgrass wants water, now you will know when and how much.

■ When you have a well-designed irrigation system that can distribute water to match specific site conditions, the real-time soil information provided by Turf Guard allows you to apply precise amounts of water where and when it's needed. Maintaining optimal soil moisture levels across your course will enhance turf health and playability while reducing your water use.

“It has definitely saved me some water. Instead of actually going out and measuring, I look at the data and see if it's needed, and sometimes it isn't. I would say there has been at least a 10% savings in water...and I pay for my water.”

– David Dore-Smith
Director of Golf Course Operations
Copperleaf Golf Club; Bonita Springs, Florida

With Turf Guard® you save water — and money and time — in many ways:

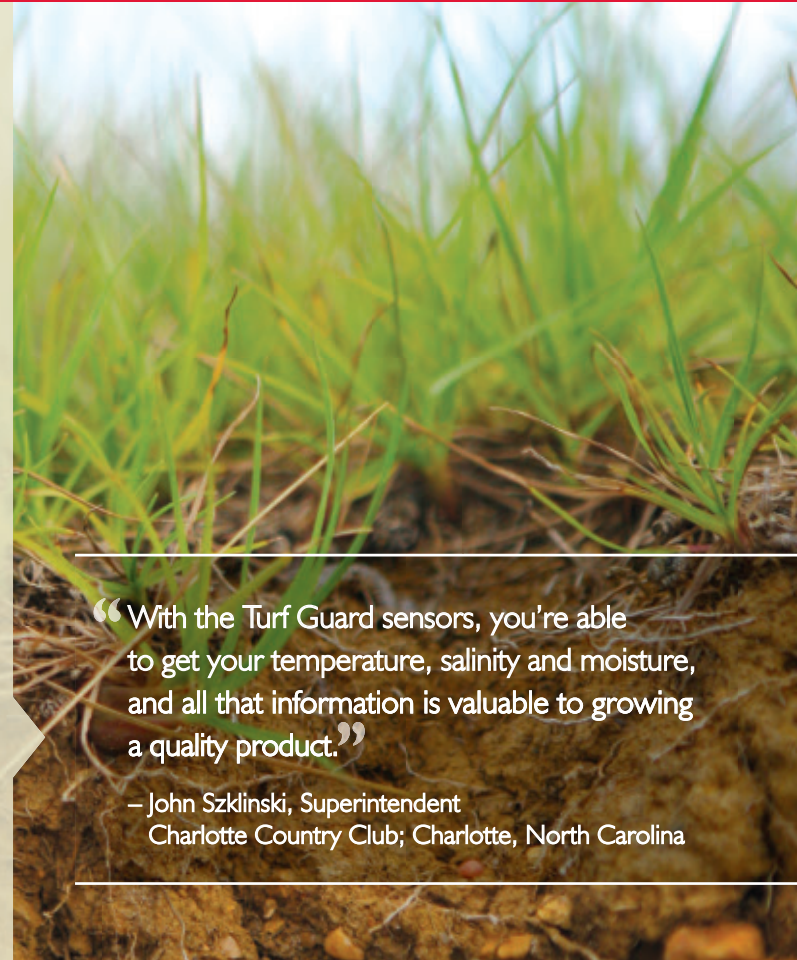
- Eliminate overwatering by identifying which parts of the course have sufficient moisture already.
- Irrigate individual areas based on their exact needs at the time—no more, no less.
- Minimize wasteful runoff by knowing the soil's ability to accept, hold and filter water.
- Stretch the time between irrigation cycles so the turf extracts more moisture from the soil.

Get to know your soil better, so you can treat it better.

■ In addition to great water-saving benefits, the Turf Guard system provides soil temperature and salinity information to help you prevent and fight damaging turf diseases, pests, salinity problems and other stresses.

Turf Guard enables you to:

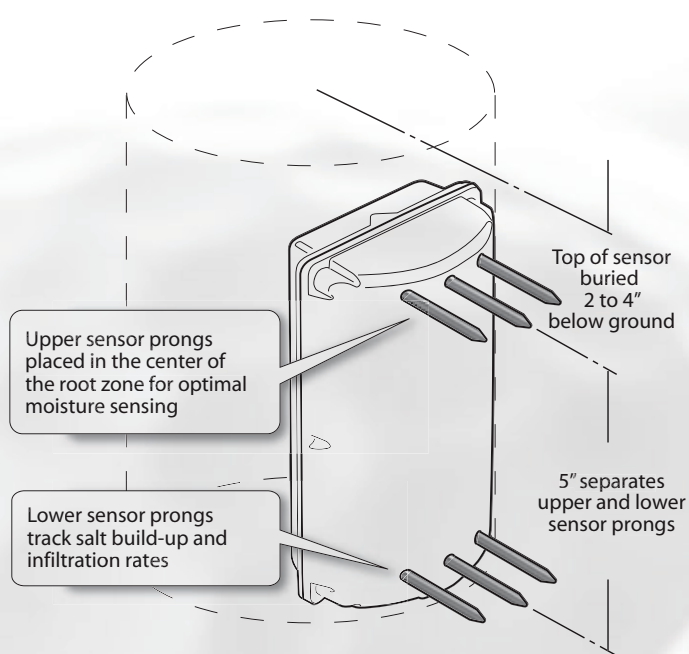
- Schedule salt flushing events and monitor the flush itself at two depths.
- Identify heat stress conditions to regulate soil moisture during those times.
- Monitor turf for risks of fungal infections.
- Track soil thaw or freezing in Northern locations.
- The Turf Guard system can even be programmed to alert you when defined thresholds are exceeded.



“With the Turf Guard sensors, you're able to get your temperature, salinity and moisture, and all that information is valuable to growing a quality product.”

– John Szklinski, Superintendent
Charlotte Country Club; Charlotte, North Carolina

Innovative technology makes Turf Guard® work. And keeps it simple.



■ The Turf Guard system consists of buried sensors, above-ground repeaters, a base station and a user interface. It's all very simple to install and use. Each wireless Turf Guard sensor can be easily buried in their selected sites in just minutes, using a standard cup-cutting tool with minimal disruption to the turf. Your authorized Toro distributor can completely manage installation and set-up to make sure you get maximum value out of the system.

- Typically, a new Turf Guard system can start with as few as three sensors, and you can grow the system easily from there.
- Sensors are installed in each selected area at the critical root zone.
- The sensors wirelessly transmit soil data they measure, every five minutes.
- Above-ground repeaters relay transmitted data to the base station at your central control system.

With Turf Guard, it's easy to get the message when your course tells you something.

■ Accessing information from Turf Guard is fast and simple. You can get real-time course data on any computer equipped with Internet capabilities, or even on your smartphone.

Strategic placement of Turf Guard sensors allows you to analyze spatial variation in soil conditions or topography, so you can create and map irrigation management zones. Smarter watering decisions can then be made based on specific moisture needs by zone,

“It's extremely user-friendly. It's kind of a one-stop shop for those pieces of data, so I don't have to go to five greens to collect it.”

— James Campion, Superintendent
NCR Country Club; Kettering, Ohio

along with accurate decisions about salt flushing, disease prevention, heat stress, aeration and more.

- Toro SiteVision™ software automatically stores and displays all data received from the sensors.
- The dashboard provides high-level information for each location type, including detailed graphs of course conditions.
- Turf Guard also ties into Toro's National Support Network (NSN®) for 24/7 assistance.

Connecting Turf Guard with proprietary Toro software and central control systems will enable you to do much more with the timely information you receive. By knowing when supplemental irrigation is needed—or if the course has enough moisture—you can adjust watering start and run times for maximum efficiency.

- The repeaters are conveniently attached to, or placed inside existing irrigation pedestals.
- Soil information received at the base station is instantly accessible on your computer screen.
- A central database web server can store years of data from the sensors.
- Unlike other products, Turf Guard sensors have no wires to damage or trenches to dig.

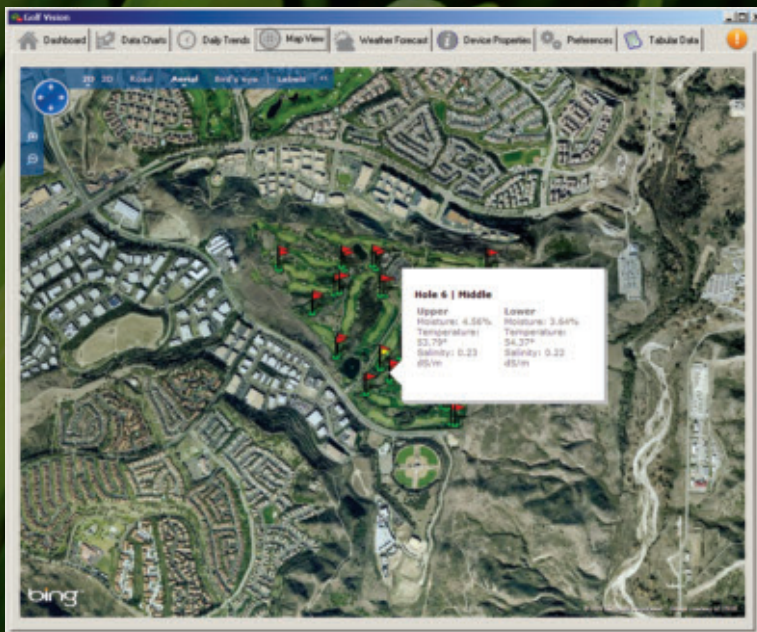
- Your authorized distributor can manage the entire installation process and factory-trained Toro technicians are available to help you.
- Powerful Radio Frequency output allows for simple placement of the base station in a windowsill or other convenient location.



Simple Installation of the Turf Guard® Sensor

“We installed sensors at the front, middle and back of a green. We loved the data we were able to extrapolate. We’re considering adding greens and also some key fairway points and tying those together to give us the maximum amount of information.”

– Jeff Baker, Superintendent
The Golf Club of New England; Stratham, New Hampshire



Course View



The Dashboard

Turf Guard® delivers many benefits, but it's one-of-a-kind.

■ By giving you instant data on the actual conditions of each hole of your course, Turf Guard helps you make the right choices to use water more precisely and to offer the best playability for your golfers.

“I can see how my irrigation has affected my numbers...and how I'm getting water into the root zone, which is what you want. I use it every day, so to me it's pretty valuable.”

– Kurt Desiderio, Superintendent
Saticoy Country Club; Somis, California

Just consider everything you get with Turf Guard:

- Ability to monitor critical soil data automatically, in real time
- Power to make more accurate, responsive management decisions
- Protection for your course and its aesthetics
- Better use of your time
- Potential for significant water savings
- Potential to reduce electrical costs associated with your pump station
- Installs quickly with minimal disruption to your turf
- No wires, no trenches and minimal surface disruption
- Reduced maintenance and labor costs
- Unmatched efficiency when combined with Toro® control systems
- Easier compliance in the event of water restrictions
- Authorized Toro distributors can manage installation of the entire system
- Receive ongoing system support from your local distributor and Toro's 24/7 National Support Network (NSN)
- Attractive Toro financing options

To learn more, contact your nearby Toro distributor, call 800-803-8676 or go to www.turfguard.com.

COUNT ON TORO.

Toro products are developed by golf irrigation experts for individuals like you who work hard to maintain flawless turf conditions. We strive to help you manage your water, energy and labor resources most effectively, while delivering the best playing conditions on your course.

As issues about water usage continue to impact golf, count on Toro to take an industry-leading position in finding new, practical and innovative ways to irrigate more efficiently. Toro stands behind our quality products with the most experienced service

professionals—from installation and training to system optimization and everything in between, including financing. Toro also funds research and support for several trade associations, all to help us understand your challenges and provide better solutions.



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