

Best for less

By Stacie Zinn, President, Environmental Turf

In the continuing search for methods to become more irrigation-efficient on Australian golf courses and sports fields, perhaps it is not just the amount of water we are using, or how it is being applied, that should be considered. Perhaps it's the water requirement of the turfgrass itself that could provide a sustainable answer to the water dilemma.

Seashore Paspalum (paspalum vaginatum) is a warm season grass that can be used just about anywhere one might use Couch grass. Beginning neck-and-neck with Couch during the establishment of a golf course or sports field, Both Seashore Paspalum and Couch grasses need typical amounts of water to achieve the grow-in of a healthy root system and for an even turfgrass playing surface. However, as far as irrigation is concerned, Seashore Paspalum differs from Couch in two very significant ways: Seashore Paspalum requires up to half the amount of water needed by Couch for irrigation once established and; Seashore Paspalum may be irrigated with poor quality water sources, saving on precious drinking water supplies.

In Australia, two varieties of Seashore Paspalum called Sealsle-1 and Sealsle-2000 have been available for a few years. Now, a newer variety of Seashore Paspalum called SeaDwarf Seashore Paspalum has just been released from quarantine in Australia. SeaDwarf is currently being licensed to sod producers around the country through Environmental Turf, a company based in the American state of Florida. SeaDwarf is the only dwarf cultivar of Seashore Paspalum. It has a much finer leaf texture than the older Sealsle varieties, may be used from tee-to-green on a golf course for only one grass to manage, and can be mowed below 25 millimeters (1/10th-inch) for extremely fast green speeds.



This SeaDwarf ball field was installed at Central Winds Park in the City of Winter Springs, Florida, USA. The park was recently honored with the Grand Award from the Professional Grounds Management Society for exceptional grounds maintenance.

A shining example

In the U.S., Hammock Bay Golf & Country Club in Naples, Florida, is grassed with SeaDwarf Seashore Paspalum wall-to-wall on all 18-holes. Rodney Whisman, golf course superintendent at Hammock Bay, reports; "During the grow-in process we would irrigate the greens every hour on the hour for five minutes then slowly weaned them back as it's growing in."

Once establishment has been achieved, this is when Seashore Paspalum really shines. Irrigation frequency and amounts can and should be cut back drastically on Seashore Paspalum, by as much as half the amount used during grow-in.

Whisman said after grow-in his irrigation system is used no where near as much as when the course was young. "Now," he said, "[the irrigation heads] are run basically every fourth night for about 10 minutes."

Even more telling, Stewart T. Bennett, a certified golf course superintendent at Alden Pines Country Club in Bokeelia, Florida, generated a report that illustrated his Seashore Paspalum golf courses' consumption of water over a 9-year period. The local water authority allowed him some 9.6 million gallons of water per month, (approx. 36.48 million liters) which was calculated using the average amount of water needed for a Couch golf course. However, after almost a decade's worth of water use, Bennett's Seashore Paspalum course used only one-third of its allocation.



Lost Key Golf Club in Perdido Key, Florida, is grassed from tee-to-green with SeaDwarf

Cutting back water helps growth

Not only is using less water a benefit from a drought standpoint. Cutting back on irrigation quantities actually seems to have a beneficial effect on Seashore Paspalum. A study conducted by J.H. Lee, L.E. Trenholm and J.B. Unruh at the University of Florida titled "Physiological Responses of Warm-Season Turfgrasses under Deficit Irrigation" showed the aggressive nature of the Seashore Paspalum root system in its attempt to seek out water. The study showed that under deficit irrigation, Seashore Paspalum produces deep roots. In effect, it looks for water deep in the soil column rather than passively waiting for above ground irrigation. What this means is, giving the grass less water once established actually helps it to become stronger turf. Whisman reports having "three-foot roots" in his fairways - the equivalent of 90 centimeters!

Because Seashore Paspalum initially developed in seawater conditions on sand dunes, the grass is a halophyte, naturally able to take in and store salt. This inherent ability allows Seashore Paspalum to be irrigated with water sources other than potable drinking water, unlike Couch. Lesser quality, highly salty water—effluent, reclaimed water, even seawater under correct management—may be used for daily irrigation. (In fact, the grass is so salt tolerant that ordinary table salt may be used as an herbicide on this turfgrass! But we digress.)

A recent article by the United States Golf Association Green Section states that 'SeaDwarf tolerates a wide range of irrigation water quality'. Todd Lowe of the USGA Green Section said he feels that Seashore Paspalum can tolerate a salinity of 34,500ppm, (seawater levels).

No adverse effects

At those levels, the soil must be flushed with either rain or freshwater irrigation. The issue here is not whether the grass can handle high levels of salt. Rather, the management issue is

continued ➤ flushing the salt out of the soil column itself.

Under extremely high saline conditions, with salt loads approaching seawater levels, Seashore Paspalum reacts by slowing down its growth rate. Therefore, it will take longer to grow-in a Seashore Paspalum golf course or sports field under seawater conditions as compared to growing it in at freshwater conditions. Still, the grass can be irrigated with what would be considered enormously high salt levels for most other grasses with no adverse effects.

Testing on home turf

If high saline water, such as seawater, were to be used as irrigation in Australia where

rain is inconsistent at best, a mix of salt water and a better quality water irrigation source could allow for higher flexibility and better quality turf. Using reclaimed or treated water, where salt levels rarely approach 12,000tds, the grass should be unaffected and not require flushing.

At the Redlands Research Station in Queensland, Dr. Don Loch has SeaDwarf at fairway height in a demonstration plot and is currently observing SeaDwarf in a trial situation at greens height. Dr. Loch is authorized to send out samples of SeaDwarf to collaborating superintendents from Melbourne to Cairns as a part of an ongoing greens project to record

adaptation to different climatic conditions in Australia.

While no single grass will solve all of the water management issues facing Australian golf course superintendents and sports turf managers, with its lower water requirements and adaptability to accept lesser irrigation sources, Seashore Paspalum certainly offers intriguing characteristics to help address some of the country's most pressing water challenges.

For more information on SeaDwarf visit www.environmentalturf.com. The website offers a book on the care of maintenance of the grass, available for free download.

Upgrading Investment

A renovation is probably the best investment an existing golf course can make to improve its profitability.

As new courses are being built, existing courses have a more difficult time delivering the expected playing conditions. Good golf courses benchmark against their competitors. The questions that existing golf courses need consider when looking to upgrade include:

- Do I want or need to improve playability?
- Does my course face increasing competition for rounds, fees and/or members from other courses?
- Does my competition have new technology that improves playability or productivity?
- Is there a new golf course in development near me?
- Has the equipment on my course reached the limit of its life? (NOTE: Over time, all equipment eventually becomes too expensive to use)
- Have I documented the maintenance costs and coverage weaknesses of my system?
- Does my course look better or worse than other courses near mine?

Irrigation has evolved as design and installation techniques, materials and specialised products have developed. Take a long hard look at all aspects of your existing system, its operation, its maintenance and whether it is still a viable and cost effective turf management tool.

Often the existing system was installed several years ago, using technology available at that time and modifications have contributed to an increase on system hydraulic and electrical demands to where it cannot be expanded any further. Operating beyond its original design parameters results in further reduction in system performance and increased system maintenance.

Control technology has advanced rapidly and is generally the area where biggest benefit can be derived from money spent with little course disruption. For example, an aging electro-mechanical system can be simply replaced with a PC central and radio controlled satellites in a few days to cut watering times by up to 50% with no digging to lay cables. Existing sprinklers can have the internal assembly updated also without course disruption.

Some problems with aging irrigation systems that bring associated extra cost are:

Applying water to the course within a realistic watering window.

- Labour spent hand watering and moving sprinklers during the day and night watering
- High cost associated with running pump station at peak times



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