

## The Problem With Paspalum Turf

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### COMMON SENSE AND REALITY

Seashore paspalum (*Paspalum vaginatum* L. Swartz.) is a relatively new entry into the very competitive warm season turfgrass industry. Some publications have painted the grass as a 'miracle grass' due to its inherently high salinity tolerance and multiple use traits. However, there is no perfect grass and the level of perfection that most grass managers would love to have may never be achieved with any turfgrass. Breeding programs are always striving for development of new and improved pest and stress tolerant cultivars.

Growing a grass that is constantly exposed to environmental challenges and decisions of managers are often key limiting factors to achieving performance expectations, regardless of the grass genetic attributes or deficiencies. Site-specific interactions among irrigation water quality, soil profiles, the specific turfgrass cultivar, and climatic extremes in ecosystems that are dynamic and not static will determine the success or failure in growing any turfgrass on any location.

The grass manager needs to understand the boundaries under which that grass will grow. The grass manager needs to understand that all grasses are not created equal, and yet be able to determine the site-specific management program(s) that are required to maximize the growth and development of that grass at a specific location.

Learn the grass and its traits, and if you are not willing to understand the specific differences that seashore paspalum has compared with any other turfgrass, then do not plant any paspalum cultivar because successful management of this grass is totally different than any other warm season grass, and the turfgrass performance will likely be less than expected.

### POTENTIAL DISADVANTAGES

Since this grass is relatively new in the turfgrass industry, the lack of knowledge and experience in growing the grass and especially in manicuring this grass at greens height-of-cut is a significant challenge. The grass grows in faster than most other grasses, but the agronomics to establish and maintain a top quality putting surface takes longer and requires diligent scheduling of critical management protocols, such as with height-of-cut reductions and cultivation techniques.

**Greens management requires the correct use of equipment (smooth rollers, groomers, brushes), and an aggressive agronomic program to achieve acceptable greens speeds over 10.5 feet as an absolute requirement once you have achieved 100% canopy density due to comparisons with the ultradwarf hybrid bermudagrass cultivars. Use of plant growth regulators (Primo), light frequent topdressing, verticutting occasionally, and grooming 3-5 times weekly while varying the height of the groomer are critical components in the greens agronomic program. Use of medium soft brushes during the early canopy manicuring stages is required to pull up horizontally positioned and wax-coated leaves that slow greens speeds and cause chatter (bumpiness) or unacceptable trueness in ball roll.**

**Paspalum has a high water composition in the shoots that requires careful potassium fertilizer applications to sustain turgor pressure and osmotic adjustments in response to increasing irrigation water and soil salinity accumulation. The high moisture component in the leaves and above ground shoots coupled with a high wax load on the leaves can slow greens speeds, can cause swelling of tissues and increase the potential for scalping; and coupled with high humidity, can increase the potential for disease challenges. This moisture-laden surface tissue is softer and can be more susceptible to ball-mark compression damage if not carefully managed to firm up that top 1-2 inch (25-50 mm) upper soil profile on greens surfaces.**

**Sensitivity to herbicides used on other warm season grasses such as hybrid bermudagrass is high, and the herbicide arsenal is smaller in number compared with other warm season grasses (although more and more herbicides are adding paspalum to the label). Persistent weeds such as crabgrass, goosegrass, signalgrass (Alexandergrass), and contamination from bermudagrass are difficult to control and eliminate.**

**Paspalum can be quite sensitive to nutrient imbalances, especially those elements that govern expression of color such as calcium and magnesium (phosphorus, iron, manganese, and sulfur are also involved in color expression). Use of poor quality irrigation water may require regimented applications of other amendments to counter salt buildup in the soil or to promote nutrient stabilization in the turf (examples are calcium, potassium, and manganese plus other micronutrients) since those salt ions in the irrigation water can also foliarly feed directly into shoot tissues.**

**Thatch management is primarily controlled with proper (judicious) nitrogen fertility and regularly scheduled cultivation programs. Fairways can be prone to disease challenges if thatch accumulates, if they are persistently too wet, or if nutritionally imbalanced.**

**Seed head production can be persistent during certain times of the year (especially around the longest day of the year) or when the grass is mechanically or environmentally stressed. Seed head exertion varies among the cultivars (Supreme and Platinum TE™ produce the fewest seed heads) and breeding selection programs involving new cultivars are focusing on reducing the genetic tendency for the trait. The probability for actual seed development in monostands of a paspalum**

cultivar are extremely low and very specific environmental conditions and genetic profile differences are required for acceptable viable seed production.

The grass cannot be germinated (from seed with >1500 ppm TDS water) or grown in from sprigs with high salinity (>2000 ppm TDS) irrigation water but can be maintained with this water once the grass is well established and the salt tolerance mechanisms have been activated. Application of silicates prior to seeding is a good management option to improve seed establishment.

Salt is a growth regulator (gibberellin inhibitor) on stolons (which in paspalum is the final 'fill-in' to achieve 100% canopy density) and is also toxic to emerging juvenile roots. Therefore, the salt tolerance level in each paspalum cultivar must be known to understand the limitations that will occur when growing in seashore paspalum cultivars with any irrigation water quality.

### **POTENTIAL ADVANTAGES**

Seashore paspalum turfgrass cultivars are not invasive and can be effectively controlled with herbicides where the grass is not wanted. Most of the herbicides that can be used on bermudagrass are phytotoxic on paspalum. An updated manual has been developed for seashore paspalum: Weed Control in Seashore Paspalum: Herbicide Selection and Resistance Management. Patrick McCullough (patrickemccullough1@gmail.com) and Ronny R. Duncan (rduncan4612@gmail.com).

The grass exhibits a shiny dark green hue indicative of cool season grasses like Kentucky bluegrass or perennial ryegrass. The grass stripes vividly with one mower pass and holds those stripes for several days.

Dew will not form on the leaves, due to the heavy wax load on the leaf tissue surface.

Paspalum has twice the root volume compared to the hybrid bermudagrasses, with deeper and more fibrous roots when the irrigation program (scheduling is less frequent and application volume is appropriate for salt management and leaching) is properly managed. As a result of this extensive root system, conservation of water, depending on quality of that water, can approach 15%; mole cricket damage is lower due to the increase in turfgrass surface density and extensive root volume; and nematode damage can be less than other grasses, but this fact does not mean that seashore paspalum is immune to nematode attack.

Divot and ball mark recovery in seashore paspalum occurs primarily from rhizomes and can be rapid compared with other warm season grasses. Application of sand to protect the grass shoots during recovery and to deter pathogen attack are appropriate management strategies.

High canopy density reduces weed competition and helps to maintain color during cool to cold temperature transitioning. Certain cultivars (Supreme, Platinum TE, Sealsle 1) have root systems that remain functional at cooler temperatures where normal warm season grasses shut down (<50 F).

Paspalum has the highest salt tolerance among warm season turfgrasses, but soil

salt accumulation must be effectively minimized to maintain a sustainable ecosystem long term. As salinity in the irrigation water increases, infrastructure requirements must also increase to enhance salt management; a highly efficient irrigation distribution uniformity system is essential; leaching plus high infiltration/percolation rates in well drained soil profiles are required; carefully positioned and highly functional drainage installation will be needed; a knowledgeable irrigation specialist for proper scheduling, chemigation or fertigation ability for application of amendments to counter soil salt buildup and adjust grass nutritional challenges in conjunction with constant monitoring of water, soil, and plant tissue are also components for successful salinity management.

Paspalum requires less nitrogen fertilizer once established compared to other turfgrasses. The grass has a low inherent requirement for nitrogen, and an uncanny ability to store N residuals from amendments for later use. The key is to keep % N concentrations in leaves below 3.0% N for all cultivars.

Remember that paspalum cultivars only absorb nitrates and any other nitrogen product will have to be converted by *Nitrosomonas* to nitrates in the soil before absorption by the grass; therefore, there will be a temperature variable and a lag phase for availability with these other N products when applied to paspalum.

The ball sits up on top of the leaf canopy for effective ball striking as long as height-of-cut remains below 1.25 inches or 37 mm.

One grass can be grown on the entire golf course, and new cultivars promote the use of one cultivar for the entire course. Planting more than one cultivar or other turfgrass species will increase the potential for cross-contamination problems and exponentially enhance the requirement for multiple management program adjustments.

Paspalum has low light intensity tolerance that promotes growth during prolonged cloudy, foggy, rainy (monsoonal), or smoggy environmental conditions; however, actual tree shade tolerance is similar to the hybrid bermudagrasses and this tree shade tolerance level is less than St. Augustinegrass or zoysiagrass. Improved cultivars for this trait include Platinum TE and Sealsle 1. In marginal light quality environments, paspalum cultivars will perform better than hybrid bermudagrasses due to their ability to absorb incidental or reflected light wavelengths.

## **SUMMARY**

There is no perfect grass and probably never will be. All turfgrasses including seashore paspalum can experience disease and insect attacks. The environmental conditions that promote pathogen attack and your subsequent management adjustments are essential determinants on how much damage can occur on the grass and the subsequent recovery time needed to remediate the problem.

Read this grass onsite and how it is responding to your management program. Paspalum will normally let you know when it is being challenged and when your management program is proper for the site.

**Monitor the irrigation water quality, soil profile changes, and tissue nutrient concentrations on a regular schedule to adjust your management program. Get science behind the adjustments. Ask questions and network with other paspalum growers.**

**Judicious water and fertilizer applications coupled with timely preventative applications to minimize biotic challenges are important management strategies. Keep things basic and avoid adding amendments beyond the label restrictions on any products. There are no miracle or magic bullet products that will remediate the salinity challenges on the grass.**

**Remember that the turf ecosystem is constantly changing, that the grass is always adjusting to those changes, and any turfgrass can be overwhelmed when the management program is not appropriate for the site.**