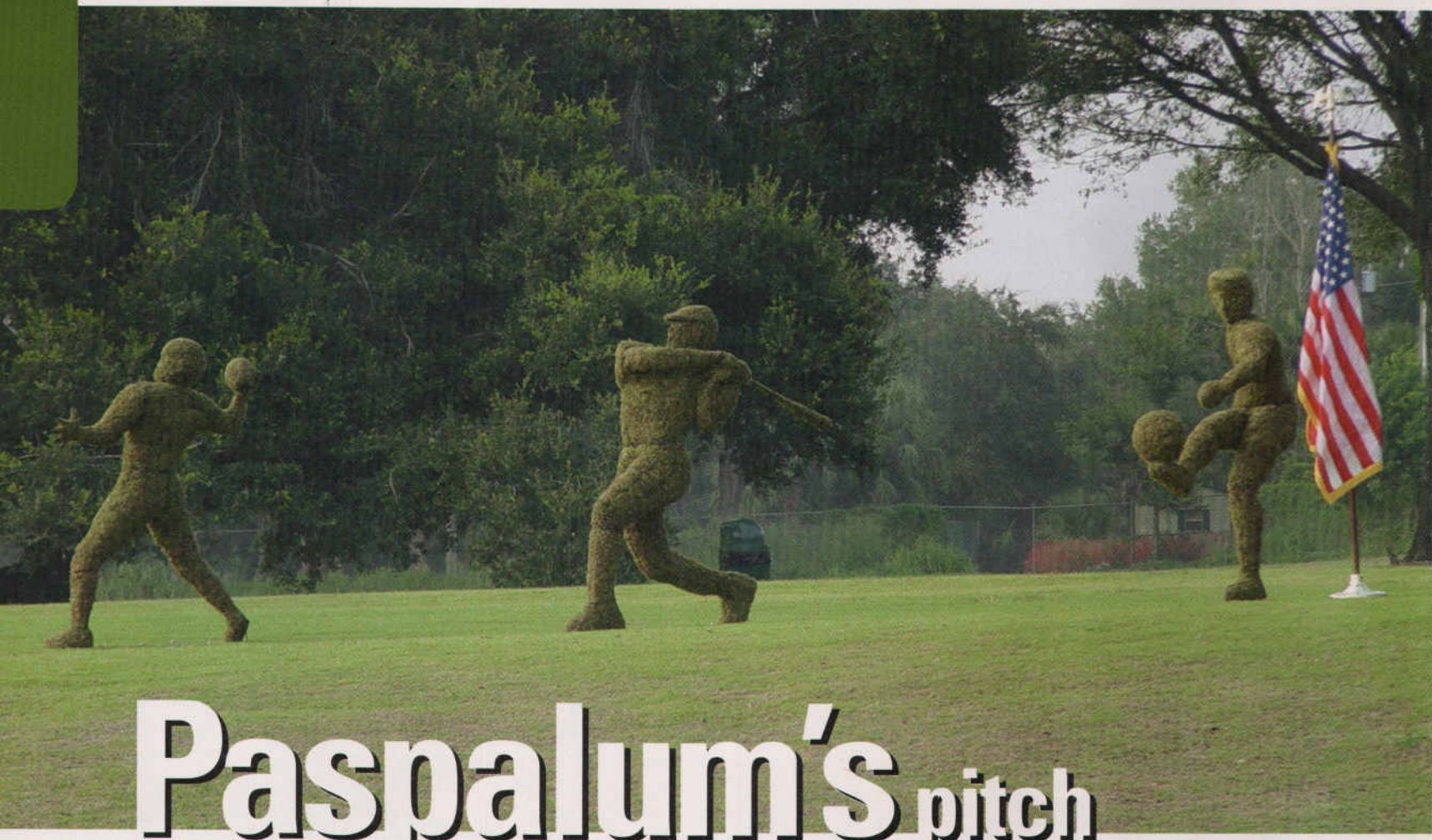

Paspalum's pitch to bypass bermuda

Commercial cultivars use less fertilizer, drink brackish water

By Chris Harrison

Seashore Paspalum is making its bid to bypass bermudagrass as the favorite turfgrass in the Coastal South and other arid, salty areas.

"Our biggest weed problem is keeping out wild bermudagrass," says Chuck Pula, park and recreation director for the City of Winter Springs in Central Florida. He has about a dozen paspalum ball fields (including soccer, football, baseball, and lacrosse) in two different Paspalum cultivars: SeaDwarf and SeaIsle-1.

"It's not perfect, but it is one tough grass that takes off fast and does well," he adds. "It definitely needs to be aerated through the season or you get 'witches broom' – round clumps where it tightens up."

He learned that lesson the hard way in 2006 when a labor situation forced cutbacks in the usual maintenance program.

University researchers agree that, despite some challenges to be addressed by anyone growing seashore paspalum, it is a variety to be reckoned with in any hot area where saltwater intrusion or brackish irrigation water is a problem.

Pula draws fresh water for their fields from nearby Lake Jessup, but does not necessarily see that as good news. "I wish the water had some salt in it, it would help us keep weeds down."

He finds salt, whether granular, rock or heated and applied as a liquid, is the best herbicide against bermudagrass intrusion. "It gives us a quick hit, but the bermuda does come back," he says. The rock salt

gave him problems for the first time this past year when it was applied late to football fields and it did not get watered in fast enough. "The kids were eating it, tossing it at each other, and complained that it hurt when they fell on it," he says.

The book on paspalum is that the grass performs well in salty conditions, requires much less N fertilizer than bermudagrass. Golf course superintendents find it plays nicely once the players overcome their shock at seeing an upright grass. In fact, some golfers like the mini-tee effect that paspalum's upright stance gives.

Georgia Plant Breeder Paul Raymer called paspalum "Bermudagrass on steroids." Indeed, it shows great grow-in speed and recovery when stressed. "It is the last warm-season grass to go dormant. It can be overseeded. It produces few viable seedheads," Raymer says.

Planting technique

Seashore paspalum can be planted as sod, sprigs, plugs, or sod-to-sprigs. Plugs are the least desirable as plugs have been trained to grow in a confined space and are less aggressive at grow-in. The preferred methods of installation are sod and sprigs. Like other grasses, paspalum sod comes in rolls or as flat slabs delivered on pallets. Sprigs are cut at the sod farm into pieces with live roots attached and are spread out on the soil at the project site.

Pula, who had SeaIsle-1 on football and soccer fields for over three years and SeaDwarf on a huge complex that includes football and lacrosse fields, says the grass has held up well. He has a field in the new Aloha variety and feels it and SeaIsle-1 do better than the SeaDwarf, which seems to require more water.

They sodded their water retention basins. Elsewhere they sprigged the fields.

"Grow-in was fantastic," Pula says. "It was amazing how quickly the sprigs ran." The playing fields, sprigged in late March, were ready to play by August 1.

A new method of installation called sod-to-sprigs is gaining popularity. This method takes live sod and cuts it into sprigs on the project site. The idea is that the sod-to-sprigs method delivers more live material at the site. Once

"PASPALUM IS BERMUDAGRASS ON STEROIDS." – RAYMER

Photos courtesy of City of Winter Springs (FL) Parks and Recreation

the sod material is chopped into individual sprigs, it is spread onto the soil, cut into the soil and then watered.

The University of Florida says sprigging rates should range from 5-10 bushels per 1,000 square feet. The best time for establishment is during periods of most active growth, when temperatures exceed 70 degrees.

In the height of the growing season, paspalum looks good, too. The "Wow!" factor is cited by almost everyone who has either planted paspalum or has done research on the grass.

"Paspalum is so hot because it is so pretty," says Lou Conzelmann of WCI Communities, developer of Tuscany Reserve in Naples, FL. This is an upper-end housing development that is built around a golf course. Paspalum is used throughout.

Golf courses love the stuff. In fact, the SeaDwarf cultivar was featured on a couple of different shows in last fall on the Golf Channel. Episodes of Playing Lessons with the Pros were taped at the Tuscany Reserve Course and Old Palm, Palm Beach Gardens, FL. Both are tee-to-green SeaDwarf courses.

Fertility

Todd Lowe, USGA Florida region agronomist, notes that paspalum does well at rates of 3-6 pounds N per thousand per year. "But be sure to keep the K, and micronutrients like Fe, Mn, Ca and Mg under control," he advises.

Clemson Turfgrass Specialist Bert McCarty says a lot of Ca is required, 15 pounds per 1000 per month, at the high end but much less in the summer. He recommended a light verticutting at 0.8 to 1.6 mm, weekly and aerification three to five times a year. "Remove the cores, topdress," McCarty said. "Go deep, say eight inches, once a year."

Like any other grass, three are diseases to deal with. Dave Spak of Bayer Crop Sciences says turf managers can expect good results with Tartan at two ounces and Signature at four ounces on greens at the Hammock Bay Golf & Country Club, Naples, FL to treat large patch. Superintendent Rodney Whisman agreed that the treated greens were two of his worse. "Now they are the two best," he said.

"At $200 per acre, Tartan won't break the bank," Spak notes.

Identifying materials to help control diseases will be a key factor in paspalum's success. Clemson Plant Pathologist Bruce Martin noted that large patch, dollar spot, pythium blight and root rots, leaf spot, fairy ring and perhaps fusarium patch all will hit paspalum. So will sting, lance, stubby root and other nematodes.

"Preventive treatment is definitely better on large patch," Martin said. "Curative is not the way to go." As with any grass, the way to reduce problems is to minimize organic matter, maintain consistent water, use wetting agents, and aerify.

Grow-in

Establishment of sod during periods of hot, dry weather requires frequent light irrigation until new roots are established in the native soil. Normally, one to two irrigations, or rainfall with a total application of 0.1 to 0.3 inches per day, will be adequate during the first couple of weeks. If the weather turns cloudy or cool, the grass requires less water and less frequent irrigation than it will during hot, dry weather.

Irrigation frequency should be reduced after roots become established in the native soil. Root establishment can be determined by lifting a corner of the sod and observing the root formation or the degree to which the roots have attached the sod to the underlying soil.

Some turf managers have trouble remembering that seashore paspalum requires more frequent irrigation during establishment than during the rest of its lifetime. In fact, it is important that sports turf managers be aware that general maintenance requirements for water on paspalum are much less than at grow-in or for most other turfgrass varieties.

Manatee County, FL turf producer Rex Cunningham produces the Aloha, 2000, and SeaIsle varieties of Seashore Paspalum. He says that paspalum has the same group of insect pests one would find with zoysia or bermudagrass: sod webworm, armyworm, billbugs and mole crickets. He uses a cheap test for insects.

"Put some lemon soap in a five-gallon bucket and put it on the turf," he says. It brings the insects up for air. It is a pretty cheap test to use when you see signs of insects."

Armyworm can be a bear to fight. "We had an armyworm invasion and it saved me about three weeks worth of mowing," Cunningham quips ruefully.

TOUGH stuff

Perhaps one of the toughest tests a grass can get is to have cars driving on it. At the sports complex in the City of Winter Springs, SeaDwarf paspalum is planted on the parking areas.

"It does very well, even in the traffic lanes," Chuck Pula says.

This past July 4, the city held a big event. Pula was forced to allow parking on the sports fields in addition to the usual areas. That would be death to bermudagrass. "We had 850 cars parked right on the sports fields. It was incredible to see how well the paspalum held up."

Even in areas with oil drips or where people had let their engines run and the grass got overheated, it bounced back fast. "It recuperates well," Pula concludes. "It's not going away."

"IT'S NOT PERFECT, BUT IT IS ONE TOUGH GRASS THAT TAKES OFF FAST AND DOES WELL." - PULA

For Chuck Pula, cutworm has been the biggest problem, especially on fresh turf. "Unless you see it right away and make an expert determination that it's cutworm, the field will go brown in three days," he says.

Damage looks like a chemical overspray or fertilizer mistake. Often the brown area has straight lines. They applied Lesco's liquid insecticide or Precise in granular form to take care of the cutworm.

Some negatives

Paspalum is a great grass in season. On the flip side, its dormant color is a dirty brown. Some feel that is less attractive than dormant zoysia.

Another factor to keep in mind is that those planting Paspalum are on the "bleeding edge" of a new variety. While its ability to tolerate a variety of stresses has driven the success of paspalum so far, agronomists note that individual varieties show broad variation in their ability to cope with different stresses.

"There has been a lag in research with seashore paspalum," says Tim Murphy, University of Georgia weed specialist. "We need to know what pests - weeds, insects and diseases - are affecting it. One challenge is that many paspalums that are close relatives of seashore paspalum are considered weeds.

The good news is we are now seeing seashore paspalum included on (weed and insect control) labels," Murphy adds.

At least three pre-emergence and four post-emergence materials are available for weed control. And chemical companies are looking to label more materials.

Paspalum has had some legal problems, too.

Legal resolution

As if agronomic challenges are not enough, seashore paspalum producers had some marketing problems. Those, however, are resolved and should trouble growers no more.

SeaDwarf Paspalum is one of the nicer commercial varieties. There were questions over patent, marketing and licensing rights to SeaDwarf Seashore Paspalum. The principals resolved them this past Spring.

In a joint statement, Environmental Turf Inc. (ETI), Fort Pierce, FL; and SFR Holding Company Inc., Denver announced an agreement settling the dispute over who had the authority to license the grass and sell the right to SeaDwarf to a third party.

SeaDwarf was developed by Stewart T. Bennett, Michael Depew and Paul Tillman. In the early days, Bennett, as president of the original company, granted a master domestic license and master worldwide license to ETI, while Depew and Tillman, as majority shareholders and the majority of the Board of Directors, sold SeaDwarf's patent and trademark to a precursor of SFR Holdings. Subsequently, a dispute arose among the stakeholders as to which company had the rights.

The terms of the agreement say that SFR holds the trademark and the exclusive patent on SeaDwarf with ETI having all rights to the trademark and patent as the Master Licensor. SFR retains the rights to sublicense, propagate, distribute, market and sell SeaDwarf in Mexico and is currently developing a network of licensed SeaDwarf sod producers in Mexico.

ETI holds the exclusive patent rights and marketing rights as Master Licensor to sublicense sod growers to propagate, distribute, market and sell both domestically and internationally. This means that ETI is the central source and marketing company for SeaDwarf in the U.S. and worldwide, with SFR acting as the licensing agent for growers in Mexico in cooperation with ETI. The status of all sod producers currently licensed in the U.S. and internationally by ETI remains unchanged.

Going forward, ETI will support SFR and all SeaDwarf producers in Mexico. Environmental Turf licensees may sell/import SeaDwarf into any country.

Chris Harrison is a free lance writer who specializes in turf subjects. ■

Right rootzone recipe maximizes performance

By Jason Henderson, Ph.D.

Photos courtesy of Michigan State Athletic Department

Athletic field rootzones pose a very interesting challenge. They must provide an environment suitable for sustaining turfgrass growth and maintain a consistent, stable playing surface despite the rigors of athletic competition. This is not an easy proposition considering the intensity of traffic and that many athletic fields endure annually.

There are two primary rootzone construction types: native soil-based and sand-based. The ultimate success of any athletic field, regardless of construction type will depend on the quality of specifications for construction, skill of the athletic field manager, maintenance budget, and a cooperative coaching staff. However, many major problems can be eliminated before construction, starting with quality specifications that include a comprehensive grow-in plan, and selecting the right rootzone constituents.

Native soil-based rootzone

Unfortunately, a preconceived notion exists that native soil fields perform poorly. This is simply not true. If the field is designed, constructed and managed properly it can perform very well. Some of the highest quality cool-season athletic fields in the country are constructed using native soil, but they were constructed correctly, aggressively managed, and the maintenance staff has convinced the coaches to constantly change traffic patterns.

The primary concern with native soils is their susceptibility to compaction. Native soils depend heavily on soil structure to develop the necessary amount of relatively large soils pores (macropores) to enable rapid

drainage and soil aeration. Soil structure can be quickly destroyed by manipulating the soil during construction.

Loamy sands, sandy loams, and loams are preferred soil textures for athletic field construction. These are considered coarse to medium textured soils, but they are still very prone to compaction. Tremendous care must be exercised when manipulating the soil to minimize compaction of both the topsoil and subsoil. A good way to minimize compaction is to use the smallest equipment necessary to get the job done. Specify that low ground pressure rated track equipment or equipment with floatation tires is used for moving soil. Compaction levels of the topsoil and subsoil should be monitored throughout the construction process by submitting samples to a laboratory that is accredited through the American Association for Laboratory Accreditation (A2LA) for proper analysis.

A Proctor compaction test should be completed before construction to determine the optimum water content of the soil. The optimum

IT IS HIGHLY RECOMMENDED THAT YOU USE AN A2LA ACCREDITED LABORATORY TO HAVE ALL COMPONENTS OF THE MIX EVALUATED AND TO DETERMINE THE OPTIMAL MIX RATIO.

water content is the water content at which maximum bulk density is achieved given a particular compactive effort. This information can be used to specify limited soil disturbance while the water content is equal to or greater than optimal water content to prevent excessive compaction. This information can also be used to specify a reasonable permeability at 80-90% maximum proctor density to ensure suitable soil physical properties. These soils should also contain a considerable amount of organic matter (4-8% by weight) (Hummel pers. communication, McCoy 1998).

Native soils tend to be very hard when dry and very soft when wet. The organic matter helps to moderate soil moisture levels and reduce soil bulk density values.

It is extremely important that native soil fields are designed to have the ability to remove excess water from the playing surface. There are two ways to remove excess water from the playing surface; surface drainage and rootzone permeability. Since the native soils will have a low root zone permeability it is critical that these fields are pitched to greater than or equal to 1.5%. The distance to a collection drain should be kept as short as possible to keep water accumulation to a minimum.

Subsurface drainage systems (i.e., 4-inch drain lines with gravel blanket) should not be installed into a native soil field without some type of drastic rootzone modification, unless the water table is high and will affect soil properties. Otherwise, subsurface drainage systems are ineffective for removing excess surface water from native soil fields.

By-Pass drainage systems such as a sand slit or XGD system installed at the proper spacing can be very effective as long as the drain trenches are backfilled to the soil surface with a material that has a higher permeability than the native soil that was removed.

Undesirable soil textures can be modified using a coarse uniform sand and a course textured compost with a high organic matter content to achieve better physical properties. However, it is highly recommended that you work with an A2LA accredited laboratory to have all components of the mix evaluated and to determine the optimal mix ratio. When using a sand to amend a soil, using more sand is not always better and if you are not extremely careful you may produce a mix that is more suitable for a parking lot than an athletic field.

Sand-based rootzone

Many newly constructed athletic fields today are built with a high sand content root zone. Why would we choose to grow a fairly needy plant in terms of nutrients and water, on a rootzone material that has a limited ability to retain nutrients and hold plant available water?

Sand, the largest of the three primary soil particles, is single-grained and maintains macroporosity once compacted (Bingaman and Kohnke, 1970). This permits rapid removal of excess water and allows sufficient gas exchange with the atmosphere. Despite the high permeability of sand root zones, sand-based fields should be pitched 0.5-1.0% to facilitate surface drainage.

The use of sand for rootzone construction started with the first United States Golf Association (USGA) specifications for putting green construction published in 1960. By the mid-1960's the knowledge gained on behalf of the golf course industry began to transfer to athletic fields when Dr. Roy Goss began recommending high sand content rootzones for athletic fields (Goss, 1967). Since then, the USGA recommendations have been used as a guideline to construct many athletic fields. The USGA recommendations have been revised several times with the latest revision in 2004 to optimize putting green construction not athletic field construction and performance. The activities performed on a putting green obviously differ greatly from those on an athletic field and many athletic fields had very unstable playing surfaces.

In an effort in increase the stability of athletic fields, a laboratory study was initiated at Michigan State University in 1998 to determine the percentage of silt and clay that could be added to a sand to maximize stability while retaining adequate root zone permeability (Henderson et al. 2005). Previous work concluded that small additions of silt and clay to a sand quickly reduced permeability (Adams and Jones, 1979; Baker, 1985).

However, the amount of fine textured particles that must be added to sand to get a substantial increase in stability had not been determined. A well-graded sand was mixed with a sandy loam textured soil to produce eight different mixtures. Each mix was compacted at three water contents (5,9,13% by weight). The eight sand-soil mixtures were subjected to four different analyses: Standard Proctor Compaction Test (ASTM D698-00), California Bearing Ratio (ASTM D1883-94), saturated hydraulic conductivity, and pore size distribution.

The results of this research showed that it required 10% silt and clay combined to substantially increase the bearing capacity (soil strength) of the rootzone while still retaining adequate permeability (7.5 in./hr). The other important point to note is the effect water content at compaction had on the permeability of the rootzone. The higher the silt plus clay content of each mix, the greater the negative effect water content at compaction had on rootzone permeability. This indicates that if a rootzone contains an appreciable amount of silt plus clay (>5%) the rootzone should be compacted at (<5%) gravimetric water content.

These results pertain to mixes created using this sand and soil only. Optimal mix ratios for other sand and soil sources should always be determined by laboratory performance testing using an A2LA accredited laboratory.

Results from this research contributed to selecting the rootzone constituents for the playing surface conversion of Spartan Stadium in 2002, the main venue for football games on the campus of Michigan State University. Thanks to Amy Fouty, CSFM, and her crew, Spartan Stadium received the STMA Field of the Year honors for the College and University Category in 2005.

THE HIGHER THE SILT PLUS CLAY CONTENT OF EACH MIX, THE GREATER THE NEGATIVE EFFECT WATER CONTENT AT COMPACTION HAD ON ROOTZONE PERMEABILITY.

For many years selecting the best components for an athletic field rootzone was complicated by the fact that there were no well-accepted specifications for particle size distribution or performance criteria for athletic field root zones. In January 2004, the American Society for Testing and Materials published ASTM F2396-04 *Standard Guide for Construction for High Performance Sand-Based Root Zones for Sports Fields.* This standard provides specifications for particle size distribution and performance criteria unique to athletic fields. The performance criteria include physical, chemical, and mechanical properties. This publication is a tremendous step toward building playing surfaces that are safer, more consistent, and more resilient.

The key to a high quality athletic field, regardless of construction type, starts with quality specifications, complete testing of materials before construction and a quality control testing program throughout the construction process. A complete list of A2LA accredited laboratories and proper sampling methods is at www.usga.org.

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