

Varieties Bred for a Purpose

By Brian T. Scully

Turfgrass breeders are always on the lookout for the next new grass variety, perhaps the next breakthrough or even the next "great" or "superlative" grass. But the search for improved turfgrass varieties is not undertaken without some thought toward the end result.

At the University of Florida, a team of researchers has developed four new turfgrass varieties, including UltimateFlora Zoysia, Hammock Centipede, PristineFlora Zoysia and Aloha Seashore Paspalum. These varieties are the result of nearly a seven-year research effort that included plant breeders, agronomists, plant physiologists and entomologists. Over the course of the development period, lesser breeding lines were tested and dropped from the breeding program. These four elite breeding lines survived the "winnowing" process and ultimately became the four cultivars that met the criteria defined at the beginning of the process.

In other words, these cultivars were bred for a purpose based on a set of breeding objectives delineated at the outset of the program.

The process began with the general goal of creating new grasses that could, at one extreme, replace existing varieties but more realistically

provide sod growers and consumers with a set of alternative grass varieties that would be easier to manage and maintain.

In the case of residential lawn grasses, our purpose was to develop one or more cultivars that could help diversify the Florida landscape environment, which is presently dominated by Floratam St. Augustine. In actuality, St. Augustinegrass was originally used as a forage grass, and Floratam was derived from that germplasm base. However, it was bred to have a more refined growth habit that was better suited and adapted to the landscape. By some standards, St. Augustine grasses are coarse textured, and many Florida residents who have moved here from Northern states remark that the St. Augustinegrass in their yards looks like the crabgrass they used to kill out of their lawns up north. This is perhaps unfair to a grass that has served our industry so well for so long, but unfortunately perception often usurps reality.

Aesthetic reasons alone were not sufficient motivation to seek an alternative to St. Augustinegrass. The real impetus was to enlarge the array of grass varieties in the marketplace and to find a set of adapted genotypes within



Bayer Environmental Science

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Before long, it will be time to think about cleaning up weeds on dormant bermudagrass turf. Don't forget about an old standby for taking care of tough weeds – Sencor herbicide. This product offers highly effective, broad-spectrum weed control on both dormant and actively growing bermudagrass turf. In addition, Sencor can be tank-mixed with MSMA to control crabgrass, nutsedge, barnyardgrass, common yellow wood sorrel, sandbur and dallisgrass.



Author Brian Scully talks about Aloha Seashore Paspalum at a field day held last fall at the Emerald Island Turf farm in Avon Park, Fla.

warm-season turf species that were hopefully more pleasing and required less care. For example, centipedegrass and zoysiagrass are generally known to require less maintenance than either bermudagrass or St Augustinegrass. In Florida, where population growth is a matter of great concern, we must be diligent about the conservation and use of our water resources. In some communities such as Volusia County, Fla., residents are issued \$25 fines for violating water restriction guidelines, reports the *Daytona News-Journal*. Water restrictions are commonplace in Florida and the continued reliance on a single species or a single cultivar within that species may be imprudent, particularly if it requires heavy water use. Historically, continual monocultures eventually developed problems. The breakdown of resistance to chinch bugs in certain varieties of St. Augustinegrass is a familiar example. Routine chemical treatments are now required to maintain superior turf quality in chinch bug-infested regions.

We believed there should be a wider set of choices for warm-season lawns. Of the many breeding lines we tested, two lines seemed to routinely stand out from the others and met our selection criteria. The first is Ultimate Flora Zoysia, a new medium-textured genotype of zoysiagrass taxonomically known as *Zoysia japonica* Stued. It is essentially a "Meyer-type" zoysiagrass with some distinct differences. Ultimate has a finer-textured leaf blade than either Meyer or the more recently developed Empire zoysiagrass. In comparison to the standard St. Augustine variety Floratam, all of the current zoysiagrasses have a more refined texture. And surprisingly, Ultimate felt softer to the touch.

Aesthetics aside, we wanted to exploit the well-known interspecific differences among the warm-season turf species. In general, the zoysiagrasses have been ranked "better" than the St. Augustinegrasses for drought resistance/water-use-efficiency, shade tolerance and wear tolerance. Based on these general differences among these two species, some of our selection criteria were satisfied at the outset of the project. In addition, zoysiagrass is not a preferred host for the chinch bug.

Marketability to sod growers was also a consideration in the decision to release this grass. There are a number of fairly popular zoysiagrass varieties that are used in residential landscapes. These range from the classic and now 50-year-



old variety known as Meyer, to some of the newer varieties developed in Texas, Florida and the Carolinas. In comparison to many of these "Meyer-type" zoysiagrasses, Ultimate not only had the finer leaf structure noted above, but also produced fewer seed heads and exhibited a deeper green color in our tests. Although, "beauty is in the eye of the beholder," we felt these traits provide us with a strong contender for the Florida market and hopefully beyond.

Another feature prompted us to consider the release of this genotype. From a commercial production standpoint we found that Ultimate had a faster growth rate than the standard varieties. So far, this trait has allowed sod producers to more quickly grow in their fields and produce a marketable crop in less time than it takes to grow in other "Meyer-type" varieties. This was confirmed in our small plot studies where it took only 10 months to attain full coverage.

Our second landscape variety is Hammock Centipede, which is taxonomically known as *Eremochloa ophiuroides* (Munro) Hack. Centipedegrass has long had the reputation as the "Lazy Man's Grass," so we decided to exploit this biological attribute and reflect it in our logo and variety name. Like most of you, we felt that less time spent with the lawn mower was a good thing. So this breeding program became somewhat of an emotional endeavor. Reasonable aesthetics along with reduced maintenance were a prerequisite for the selection of Hammock.

This genotype has exhibited a much deeper green color than the standard lime-green appearance typical of many centipedegrass vari-

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This Jacksonville, Fla., home was a test site for using Aloha Seashore Paspalum in a residential application. Shown here is Brian Speiser of Brian Speiser Irrigation, who maintains the grass at this location.



This Jacksonville, Fla., home was a test site for using Aloha Seashore Paspalum in a residential application.



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eties. And like the other centipedegrasses, Hammock has required much less fertilizer and less mowing than the typical St. Augustinegrass.

However, the market acceptance of Hammock is considered the biggest challenge to the success of this variety. No centipedegrass has proven truly successful much further south than Orlando, and certainly no centipedegrass has ever been made widely available in southern Florida. Centipedegrass has been a success in northern Florida and throughout the Gulf and lower Southern states.

By selecting and evaluating our centipede germplasm in southern Florida we were fortunate to find a breeding line that was adapted to the unique climate and soils of this region. At some point we believed we had found a genotype that differed significantly from other centipedegrasses and the adaptive range of this species could be extended. It could also be viewed as a suitable alternative to the St. Augustinegrasses that dominate southern Florida.

Golf and sports

For sports turf and golf course grasses, the situation is similar to the residential landscape.

In Florida and perhaps many southern states, bermudagrass is the primary species used on these surfaces. But again, bermudagrass has a

reputation for high maintenance. Pest control, weed control, water use and mowing are all on the high end of the maintenance spectrum. And, unfortunately, shade tolerance and salt tolerance are not attributes of bermudagrass when compared to many of the warm-season turf species. But bermudagrass is truly one of the most beautiful turf grasses if inputs are not a serious issue.

In this breeding program our goal was to present the sod producers and consumers with a wider and more diverse array of varieties for their profit and enjoyment. And again, we simply exploited the well-known interspecific differences among the warm-season turf species. The general differences among bermudagrass, zoysiagrass and seashore paspalum are well documented and these differences also satisfied some, or at least gave us a head start on our selection criteria at the outset of the project.

PristineFlora Zoysia is an asexually reproduced genotype of Zoysiagrass. It is an "Emerald-type" grass, and Emerald is a classic zoysiagrass variety that has survived more than 50 years in commerce. Emerald is a hybrid between *Zoysia japonica* Stued by *Zoysia tenuifolia*(L.) Merr and it is still considered one of the most attractive grass varieties.

Pristine Flora Zoysia was bred to fit the niches where bermudagrass struggles. Because the zoysiagrasses generally have better tolerance to shade and require less inputs than the bermudagrasses, we anticipate this variety will function nicely around the golf course tee boxes and other areas on the fairways where shade has become a problem. Although it should be realized that all grasses require some level of sunlight.

In comparison to the standard zoysiagrass variety Emerald, Pristine had some superior features that should influence its market acceptability. The seed head and flag leaf structure of Pristine were more refined than Emerald, but more importantly, the leaves had a finer texture than Emerald. On average, leaf length and leaf width of Pristine was 21 percent shorter and 19 percent narrower than Emerald.

Additionally, Pristine had a more intense green color than Emerald. These leaf and floral traits in combination appeared to convey a more aesthetically pleasing canopy. From a sod growers viewpoint, field plots attained 100 percent cover two months earlier than Emer-

ald. This pattern of rapid "grow-in" has been repeated in the larger blocks of both Breeders Seed and Foundation Seed. This faster rate of establishment confers important agronomic advantages relative to harvest interval and crop maintenance that should also please many sod producers.

Sports paspalum

Our second sports-type turf is Aloha Seashore Paspalum, which is a medium-fine textured genotype of *Paspalum vaginatum* Swartz. Presently, there are a number of seashore paspalum varieties that have proven to be suitable alternatives to bermudagrass on golf courses and sports fields.

In comparison to bermudagrass, seashore paspalum is reputed to require less water, less nitrogen and accepts higher salinity irrigation water. And salt has even been used as a herbicide on paspalum varieties, meaning less chemicals are needed for weed control. Aloha was developed, not just as another alternative to bermudagrass, but specifically to become a more environmentally friendly choice of turfgrass for use on sports fields and golf courses. It has many of the same properties attributed to the other paspalum varieties and a few more.

Aloha has a canopy morphology that is intermediate to Sea Dwarf and Sea Isle I. Like these varieties it appears to have the same versatility for use on greens, tees, roughs and fairways, as well as for use on ball fields.

Aesthetically, Aloha displayed a darker green foliage than either Sea Dwarf or Sea Isle I. Additionally, we found Aloha had resistance to the green bug aphid, which has recently become a problem on some golf courses. We were also pleased to find that Aloha covered the research plots much quicker than either Sea Dwarf, Sea Green or Sea Isle I. This not only has implications for the sod producer but also for the recovery and recuperation of the variety under heavy use.

Already anecdotal reports have confirmed some of these research data in the test marketing phase of this release.

Throughout the development process, it has remained our goal to serve the plant breeding mandate given to UF/IFAS by our turf industry more than five years ago. My colleagues and I were asked to develop new grass varieties adapted to Florida and to diversify the genetic base upon which our turf industry relies.

In cooperation with our private sector partners we hope that these releases will serve the needs of the average Floridian and help sustain commerce and profit for one of our most important agricultural industries.

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