

Update on university turf-related research projects, Part III

Editor's note: Following are more reports from leading turfgrass researchers in the US on their current studies. Part I appeared in December 2009; Part II in February 2010.

University of Georgia Tifton Campus

Turfgrass breeding efforts at the University of Georgia, Tifton Campus are focused on the development of stress tolerant cultivars. Recent evaluations using rain-out and shade structures, non-irrigated plots, and reduced fertilizer input have been prioritized. Pesticide applications, including insecticides and fungicides, have been eliminated from routine maintenance programs to aid in the identification of natural resistances or tolerances. Specific germplasm screens have been initiated to develop plant-parasitic nematode resistance due to the loss of the most widely used nematicide and the increased regulations on alternative soil fumigants.

Turfgrass breeding in Tifton has produced broadly adapted cultivars during the last decade that have been licensed to numerous growers in many different countries and planting across the globe. In 2009, TifGrand hybrid bermudagrass was released on the basis of its shade tolerance, mole cricket non-preference, deep green color, fine leaf texture, and plasticity of response to a range of mowing heights. TifGrand has been distributed to a network of sod producers across the US and will become widely available for sale to the public during 2010.

Currently the program encompasses breeding material from the seedling stage to advanced experimental hybrids that have persisted through rigorous testing for more than a decade. More than 40 laboratory, greenhouse, and field evaluations are underway to maintain the pipeline that has provided leading turfgrass cultivars for more than a half century. An example is a promising bermudagrass hybrid that has demonstrated the ability to maintain turf quality 12-14 days longer than currently available cultivars when water is withheld.

Collaboration with other institutions has been important during the past few years and has included work with North Carolina State University, the University of Tennessee, the University of Arkansas, and the University of Florida. A new relationship has been formed with Texas Tech University in efforts to establish a breeding location outside of the southeastern US to test advanced turf bermudagrass

and centipedegrass genotypes for increased salinity, high pH, and cold tolerance, stresses not found in Tifton, GA.-Brian Schwartz

University of Georgia Griffin Campus

The turfgrass breeding program at the Griffin Campus is focused on the development of fine turf cultivars with broad adaptation and tolerance to multiple environmental stresses. Our primary focus at the Griffin Campus is the development of seashore paspalum cultivars, but we also have significant breeding efforts on tall fescue and zoysiagrass. Our multi-disciplinary team of turf scientists at the University of Georgia work closely with the breeding programs and include a stress physiologist, plant pathologists, weed scientists, an agronomist, and an entomologist.

The seashore paspalum breeding program is the largest in the world and is focused on the development of improved cultivars suitable for fine turf applications including the golf courses and athletic fields. Thus far, our cultivars, SeaIsle 1, SeaIsle 2000, and SeaIsle Supreme have been well accepted both domestically and internationally. We currently have the largest and most diverse collection of seashore paspalum ecotypes in the world and are now using this growing germplasm collection to generate new genetic variation through recombination. This approach allows us to generate thousands of new and unique individual lines each year that are subsequently screened for salt-tolerance, tolerance to low mowing, diseases, herbicides, and drought.

Superior lines are extensively evaluated for turf quality and performance over a wide range of mowing heights and turf conditions for multiple years in replicated turf evaluation trials at multiple locations across the southern U.S.

The tall fescue breeding program is developing cultivars for home lawns and low-maintenance commercial applications with high levels of tolerance to soil and environmental stresses common to the southeastern US. Lines are systematically screened for tolerance to low soil pH, compaction, heat, diseases and drought. The results of these efforts are

attractive tall fescue cultivars with good persistence even under the most stressful conditions.

The recently initiated zoysiagrass breeding program is using a similar strategy to that used for the tall fescue breeding program in attempts to develop new cultivars for home lawns, golf, and commercial applications with improved drought tolerance and performance in the Southeast. Our program has excellent resources including laboratories, greenhouses, more than 20 acres of irrigated managed turf area, warm-season and cool season research greens, low pH field plots, and automated rain-out shelters for drought tolerance evaluations.-Paul Raymer

Iowa State University

Seedbank research. Multiple trials are underway to determine the ability of both Kentucky bluegrass and perennial ryegrass to form a transient seed bank. This research stems from previous research at ISU to combat intense traffic scenarios and the commonplace recommendation from professionals to practice continuous seeding to establish a seedbank. We are interested to know if high inputs of seed will equate into bankable seed to perpetuate turf cover during a traffic season. Multiple and single seedings of higher than normal seeding rates are being evaluated. Also of interest is the loss in seed viability over time. Seed of both species have been buried in nylon bags to test both short and long-term viability.

Poa annua. Annual bluegrass has long been a problem for intensely managed golf courses and now it has become problematic in many closely mowed high performance athlet-