

# TURFGRASS TRENDS

TURFGRASS BREEDING

## Innovative Cultivars Arrive Slowly but Surely

By Leah A. Brilman

**T**urfgrass breeders are always in the process of improving cultivars, yet many of the improvements look minimal to the average consumer. Often the improvements, such as disease resistance, can't be seen by the human eye unless disease is present on a site. However, if the characteristics from one National Turfgrass Evaluation Program (NTEP) trial to the next are closely compared, the improvements are evident.

True innovation may come under a different classification than these gradual improvements, but if you compare Linn perennial ryegrass to the newest cultivars, the differences are outstanding.

Innovations may constitute developing a new species for turfgrass usage, discovering germplasm with unique characteristic in an existing species and integrating this into improved cultivars or applying different selection characteristics to develop unique cultivars. Some of these innovations are available now and others may be available in the next few years.

Improved disease resistance is always an important characteristic. New technologies in genetics enable breeders to not only select for this characteristic but also to potentially determine the genes involved in resistance.

Gray leaf spot has been devastating to perennial ryegrass in the Eastern and transitional zones of the United States. Breeders have developed resistance to this disease by select-

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PHOTOGRAPH COURTESY: MIKE RICHARDSON



The cold-tolerant bermudagrass variety Yukon is shown in the bottom left corner. Princess 77 is two plots behind it.

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ing within existing cultivars and by integrating new germplasm from Europe into existing populations. The new molecular map of perennial ryegrass has identified areas of important genes for resistance, so it is hoped breeders can maintain resistance to this changeable disease, utilizing this knowledge.

In this new European germplasm, other important characteristics have been observed, such as plants with a more spreading growth habit, which may allow development of ryegrasses with a better ability to repair. Molecular maps are also being developed in creeping bentgrass for growth characteristics and dollar spot resistance and in the fine fescues. Resistance genes can be fixed and more easily integrated into varieties with other desirable characteristics.

Hybrids between Texas and Kentucky bluegrass species have been developed and are seeing increasing interest. The hybrids combine the heat and drought tolerance of Texas bluegrass with the turf quality of Kentucky bluegrass. The initial F<sub>1</sub> hybrid, Reveille, is primarily propagated vegetatively due to seed fertility problems but has shown excellent results in the western United States. Other breeders have backcrossed these hybrids to Kentucky bluegrass to improve apomixis and fertility.

Thermal Blue has shown excellent performance in many situations, but as with Kentucky bluegrasses, each cultivar will have strengths and weaknesses. New hybrids will be coming out over the next few years and may push the adaptation range of bluegrasses further south.

Tall fescues with rhizomes have received considerable interest recently. The ability of tall fescues to make some rhizomes has been documented for some time, but it has received increased breeding attention. The Mediterranean-type tall fescues have more extensive rhizomes but are lighter green and lack the turf density of American germplasm that has been cycled for multiple generations under stress in this country.

Improvements on the number and

rapidity of rhizome expression in American germplasm are ongoing, with the concentration also including other important turf characteristics, such as disease resistance and turf quality.

Seashore paspalum is being utilized more frequently in many areas of the United States and overseas. Many vegetative cultivars have recently come onto the market, but make sure the one you are going to use has been extensively tested in your region and for your use. The first seeded cultivar, Sea Spray, is available, with more seeded ones in the near future. The seeded types are probably better adapted for home lawns, sports fields and fairways and not for greens.

In many usages, seeded or hybrid bermudagrasses may be as good a choice or better, but seashore paspalums can shine under heavy saline conditions in warmer climates. Farther north you should utilize the cold-tolerant seeded bermudagrasses such as Yukon and Riviera, or vegetative cold-tolerant cultivars.

Another important option for transitional zone areas that want a low maintenance turfgrass, with reduced water requirements are the seeded zoysias such as Zenith and Companion.

Breeders have also been exploring different species of grass for use in turf. Many of these species are first identified after the breeders have found a different species forming high-quality turf under mown or closely grazed conditions. The key is to have these new species evaluated in many environments, under varying management, to see where they might be adapted. If the species still looks promising for at least a portion of the market, it is often necessary to collect a larger pool of germplasm to find the best material. Even after years of development, getting customers to use products that are different than they are accustomed to can be difficult.

Cultivars of tufted hairgrass, *Deschampsia cespitosa*, and prairie junegrass, *Koeleria macrantha*, have both seen some usage. Other species being looked at include crested dogstail and wood bluegrass.

Sometimes we need to re-examine turfgrass species that have been around for some time for improvements or new usages. True colonial bentgrasses, *Agrostis capillaris*, as opposed to Highland bentgrass, *A. castellana*, are being looked at again for home lawns, in particular in the Pacific Northwest. This species uses very little nitrogen and has lower water requirements than many turf species. A trial in Utah, watered at 50 percent ET (evapotranspiration), explored different species for low water usage. In that test, the colonial bentgrass planted as a control had the best color and highest density.

Colonial bentgrasses do not thatch as much as many other turf species and have been used in Europe for many years for lawns.

The fine fescues are not just for shade mixtures. The improved cultivars of these low-maintenance species can be used in many areas of the country in full sun as well as shade. The reduced nitrogen and water requirements make them useful for home lawns and golf course roughs. Breeders have significantly improved the heat tolerance of these species and resistance to important diseases, such as leaf spot, red thread and summer patch.

Check the data from your regional turf programs for the NTEP ([www.ntep.org](http://www.ntep.org)). The data can be looked at by location, region and management. This will enable you to evaluate important characteristics such as drought tolerance. In other cases it is important to visit the field days at your local university to look at results for yourself.

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