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Low water-use native grasses show promise in lawn applications



Researchers at the Lady Bird Johnson Wildflower Center established test plots to evaluate how various native grasses performed as turfgrasses. These native species were grown alongside and compared to bermudagrass, a more traditional turfgrass species.

Photo courtesy of Lady Bird Johnson Wildflower Center.

As water use becomes a greater expense and concern, researchers are looking to native grasses as the inspiration for lawn varieties. At the Lady Bird Johnson Wildflower Center in Austin, Texas, Rangeland Ecologist Mark Simmons is using his knowledge of native grasses to determine how well these grasses might work on lawns. The center (www.wildflower.org) is part of The University of Texas at Austin and has a mission to promote the use of native plants.

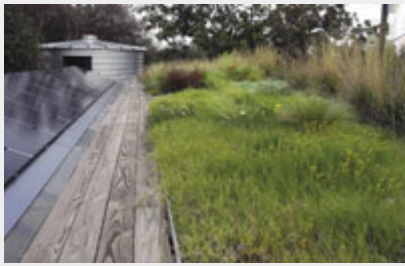
Simmons is a research scientist who has worked in grasslands in various parts of the world. "Because we do a lot of prescribed fire research, we do a lot of restoration and revegetation. So, we're quite aware of what grasses do well under different conditions," he explains. What started as simple observation of which grasses could be established and grow well with little or no water led to more scientific-based studies of which grasses fared best in these harsh rangeland and roadside environments.

Then, sensing there was a need for more water-conserving turfgrasses, Simmons' interest and research focus shifted in that direction. "We've been looking native alternative turfgrasses for a couple of years now," he says.

Instead of searching for new varieties of traditional turf species, Simmons set out to see if there were species not commonly used in lawn applications that might deserve greater attention. "We wanted to see what else might be out there," he explains. Some of the grasses chosen for testing are available commercially (intended for rangeland, pastures and other non-turf settings), as well as others not yet commercially available.

The first step was to determine which native grasses had appearance and growth characteristics that would be acceptable in turfgrass use. "We wanted to find grasses with fine leaves, short stature, which were either stoloniferous or bunch-type grasses, and we wanted them to be very homogeneous [uniform]," says Simmons. "Really, the fine leaf structure was the most important factor, because that's one of the most desirable aesthetic traits in turfgrasses."

The two grasses that stood out as top performers were buffalograss and blue grama, both available commercially as turfgrasses but neither used extensively. Both these and the other grasses tested showed significant promise. "It depends on the application. Turfgrass is used in so many different ways. For example, we're even interested in annual grasses, which could possibly be planted in areas of high disturbance, and there are several warm-season annual grasses that do show promise," says Simmons.



In projects such as this green roof, Researcher Mark Simmons is evaluating the potential of different native grasses not only in lawn settings, but also restored urban prairies and other ecologically beneficial settings. *Photo Courtesy of Marsha Miller, the University of Texas at Austin.*

Test plots of various native grasses were established to compare the natives not only against each other, but also against bermudagrass, the most widely used traditional turfgrass in the Austin area. “We wanted to see how these native grasses stacked up side-by-side,” explains Simmons. A variety of different maintenance programs also were tested. “We had one area that we watered slightly above average and another slightly below average, and we had two mowing regimens, both very low (frequency): once per month and twice per month,” he says.

Weed infiltration was also considered, and comparisons made between the bermudagrass and the different native species. “We counted out and deliberately sowed dandelion seeds in small patches and then watched germination and establishment rates to see how easily weeds could infiltrate the grasses,” says Simmons. “There was quite an interesting difference in weed establishment in the native grasses versus the bermudagrass. There was quite a reduction in weeds in the native mixes; it was certainly statistically significant.”

The groundbreaking research has been sponsored by Wal-Mart. While not a company normally involved in turfgrass research, Simmons explains that the worldwide corporation has so many properties to care for that it has a vital interest in finding turfgrasses that can be maintained with less water and fewer resources. “They have a complete company sustainability program, and they want to find grasses that they can plant on their campuses. Because Wal-Mart is so widespread, the amount of water used on the landscapes definitely has an impact on them.”

Simmons says he’s personally eager to identify low-water-use turfgrasses and

be a part of making lawns “more sustainable.” The British native has memories from his youth of mowing and enjoying the family lawn. “The lawn was my playground. I don’t want to lose lawns, and I hate that they’re being villainized in some venues-it seems so unfair. It’s entrenched in the European and North American cultures to have lawns, and I can’t see people giving that up easily. I have two kids. It would be hard to go outside and play ball in prickly pear and agave.”

Simmons and his research team are about to begin phase two of the research into alternative native turfgrasses and will be examining additional (and more complex) factors relating to watering, mowing, weeds, etc. “There’s a lot to explore and a lot of promise,” says Simmons of native grasses for turf settings. “I don’t think they’re a silver bullet. They’re not going to solve all the challenges, but there’s a lot of potential.”

One of the potential drawbacks to using native grasses in turf settings has to do with dormancy, he explains. “Drought and winter dormancy can lead to aesthetic attributes that will require some education. I field a lot of calls from around the country on this topic, and you tell people that these grasses might be brown for three of four months each year, that’s not particularly desirable. Of course, you can always overseed with a cool-season grass.”

One thing that might convince homeowners to accept a temporarily brown look is the prospect of losing their lawn altogether to watering restrictions. “For example, in some parts of California, people are already faced with having a lawn that is brown in winter or summer, or losing their lawn altogether and having gravel and agave. Given that choice, brown grass may be preferable to losing the lawn as a landscape feature altogether.”

Even at this relatively early stage in this research, Simmons has been fielding inquiries from so many people in Texas interested in installing native turfgrass lawns that he prepared a how-to document to help guide them through the process: “From our ongoing research here at the Wildflower Center, we have found that a mix of buffalograss (*Bouteloua dactyloides*), blue grama (*Bouteloua gracilis*) and curly mesquite (*Hilaria belangeri*) needs less mowing, watering and weeding and simulates nature’s shortgrass prairies,” the document explains. The Lady Bird Johnson Wildflower Center recommends proper soil preparation, a mowing height of 3 to 4 inches, and cautions against overfertilizing to avoid excess weed growth.

In addition to interest among homeowners, Simmons also sees increasing interest in native grasses among other turfgrass researchers. He feels that as knowledge and successful use of native turf increases, the field will be wide open to use such grasses in other related settings: “I do a lot of work in prairie restoration in urban environments, putting prairies back in to cities around the country. So, it’s not just about the baseball field-type lawn, native grasses need to be explored in a broad way, including grasslands and roadside settings and utility corridors. The ecological services that grasslands provide, everything from cleaning air to cleaning water to carbon sequestration, there’s a place for taller grass system, as well. There’s obviously a different aesthetic and a different function, so it’s an area that’s largely been neglected by turfgrass researchers, but I think turfgrass

folks will be the first ones to recognize the environmental benefits of grasses, and this area may get more attention.”

While taller grasses have often been seen as interchangeable in such applications in the past, Simmons argues that research is needed to determine which grasses, especially native grasses, will perform best in each given situation.

In available open areas, native grasses could be used to serve important functions like cooling or stormwater runoff, says Simmons. Grasses view many airborne pollutants, such as compounds of sulfur and nitrogen, as nutrients. “So, there might be opportunities in urban environments to increase grass cover, from turfgrasses all the way up to taller bunch grasses,” he points out. “There’s a lot of interest in sustainable landscape design, and I think grasses have a real role to play.”

Patrick White is a freelance writer and editor who has covered every aspect of the green industry in the past 13 years. He is based in Middlesex, Vt., and is always on the lookout for unusual stories.