

# Overseeding Fine Fescue in Buffalograss Turfs

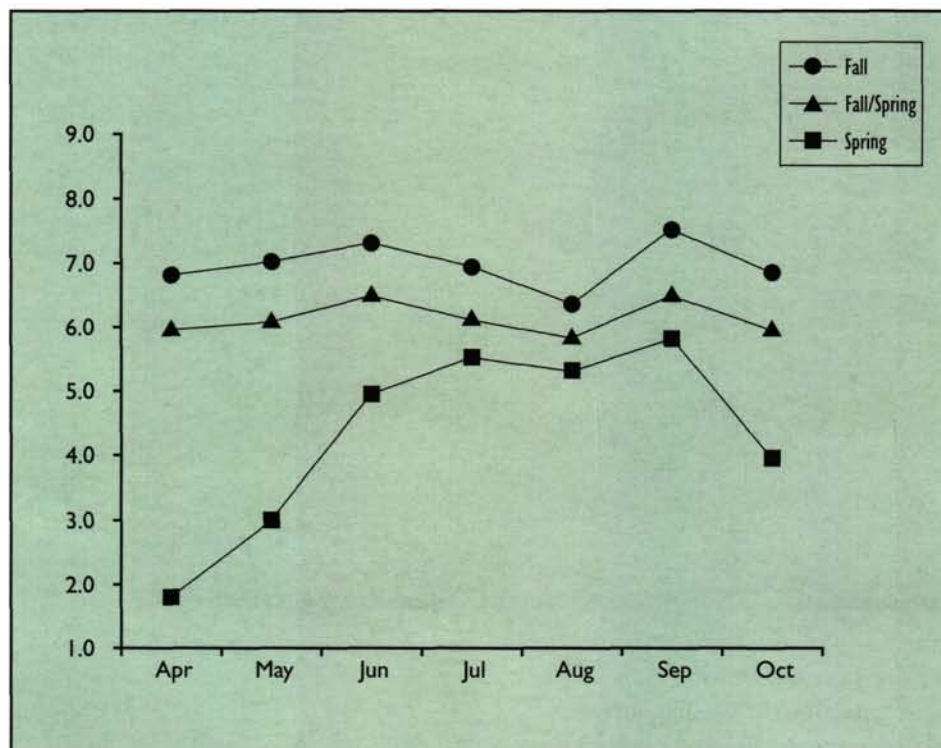
University of Nebraska researchers overseed buffalograss with blue fescue to extend the color of this native turfgrass.

BY R. C. SHEARMAN, S. SEVERMUTLU, T. P. RIORDAN, AND U. BILGILI

**B**uffalograss (*Buchloë dactyloides* [Nutt] Engelm.) is a warm-season turfgrass with excellent drought resistance and a strong potential for use where water conservation is an issue.<sup>4</sup> Buffalograss grows from central Mexico to the prairie provinces of Canada, and many cultivars of buffalograss have excellent low-temperature tolerance. This trait sets it apart from most warm-season turfgrasses.<sup>1,5</sup> Low-temperature-tolerant buffalograss cultivars go dormant in the fall, usually with the first killing frost, and have a winter dormancy period that extends into the late spring. This annual dormancy limits the acceptance and use of buffalograss as a turf.<sup>4</sup>

In theory, mixtures of warm- and cool-season grasses seem practical because the optimum growth conditions for each species should complement one another, with cool-season grasses growing well in spring and fall and warm-season grasses growing best in the summer.<sup>2</sup> However, the consequence of these mixture attempts often is a patchwork quilt appearance that results in undesirable turfgrass uniformity and quality.

Research was initiated to study the potential of overseeding fine-leaved fescues into established buffalograss turf and to improve turfgrass color and quality. The first studies investigated species, seeding rate and date, and core cultivation effects on overseeding establishment and buffalograss performance with turfs maintained as golf course



**Figure 1.** Turfgrass quality ratings for overseeded buffalograss when blue fescue was seeded in fall, fall/spring, or spring (i.e., 1-9 visual rating scale with 1 = poorest and 9 = best).

roughs. Recent studies investigated overseeding effects when turfs were maintained under fairway conditions.

## ROUGH OVERSEEDING STUDIES

Overseeding date and rate studies were conducted for two years on buffalograss turfs maintained as roughs at the University of Nebraska John Seaton Anderson Turfgrass Research Facility located near Mead, Nebr. Three fine-leaved fescues (SR 3100 hard fescue, SR 3200 blue fescue, and SR 5100

chewings fescue) were used in both studies. Fall, spring, and fall-spring seedings were compared in the seeding date study.

In the seeding rate study, seed rates of 2.0, 4.0, and 6.0 lbs. of pure live seed/1,000 sq. ft. were compared. The fine-leaved fescues were overseeded into mature stands of buffalograss that were mowed down to one inch with mowing debris removed. The turfs were core cultivated prior to applying seed. After seeding, the cores were broken up and a starter fertilizer was applied at 1.0



lb. N/1,000 sq. ft. Turfs were irrigated sufficiently to maintain a moist soil to enhance fine fescue seedling establishment. After establishment, turfs received 2.0 lbs. N/1,000 sq. ft. and were mowed weekly at 2.5 inches with clippings returned.

## FAIRWAY OVERSEEDING STUDIES

A second set of buffalograss overseeding trials was conducted in 2004 and 2005.

Buffalograss cultivars maintained as fairway turfs were overseeded with Bighorn blue fescue at 1.0 and 2.0 lbs./1,000 sq. ft. in early September. Bighorn blue fescue was selected as the overseeding species based on its drought resistance, low-fertility performance, and its grayish, blue-green color. Establishment procedures were the same as those described for the seeding rate and date trials except for the mowing height and frequency differences. Buffalograsses

were mowed three times per week at 0.63 inches and received 2.0 lbs. N/1,000 sq. ft. per season and 1.0 inch water per month, either as irrigation, rainfall, or both.

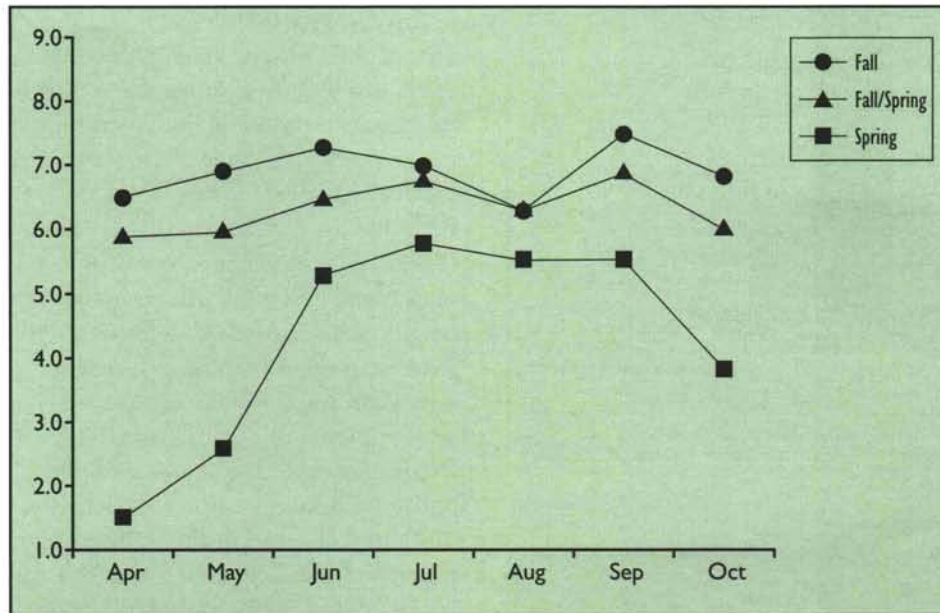
## RESULTS OF SEEDING RATE AND DATE STUDIES

In the seeding date studies, fall overseeding gave the best turfgrass quality and color, and highest shoot density ratings compared to spring or fall-spring plantings (Figures 1, 2, and 3). Spring overseeding had the lowest shoot densities, and fall-spring seeding was mostly intermediate in response. Fine fescue shoot density was highest in May and declined gradually through September, when it began to increase with the onset of cooler soil temperatures. Buffalograss composition increased during the summer months, as expected.

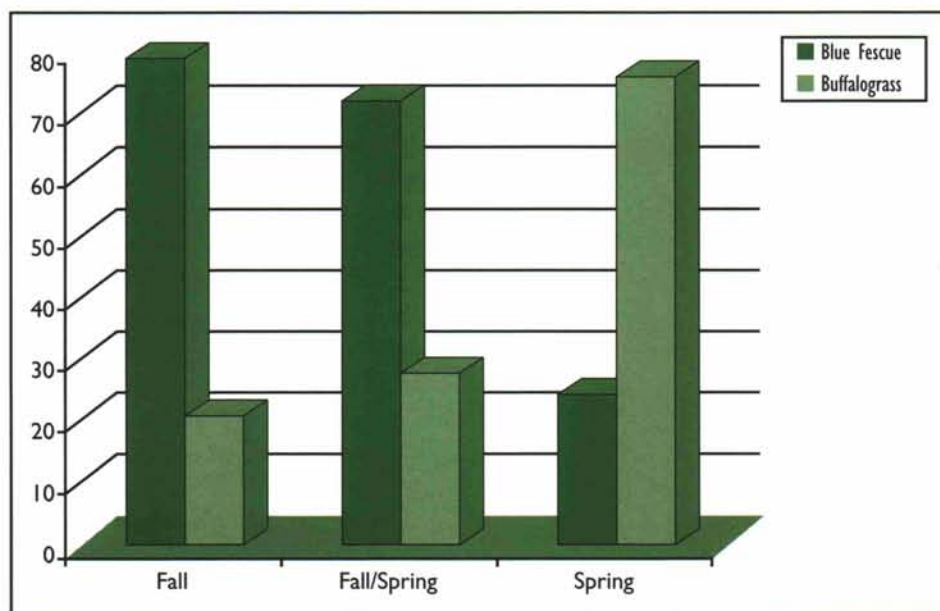
Fall overseeded blue fescue had the highest ratings for turfgrass quality and color throughout the study (Figures 1 and 2, respectively). The blue-green color of blue fescue blended well with buffalograss, giving a better season-long performance compared to the other fine-leaved fescue species studied. Buffalograss mixed with chewings or hard fescues exhibited more summer stress than the blue fescue mixtures, but all turfs expressed a decline in turfgrass quality during the summer stress period (Figure 1).

Fall overseeded blue fescue-buffalograss mixtures maintained acceptable quality ratings during summer stress periods. Research conducted in Utah reported similar findings with blue fescue and buffalograss mixtures.<sup>3</sup> In our studies, Chewings fescue overseeding treatments gave unacceptable turfgrass quality when buffalograss was dormant, due primarily to the lack of uniformity in turfgrass appearance.

There was a linear response for increased shoot density and turfgrass quality and color ratings as seeding rates increased from 2.0 to 6.0 lbs./1,000 sq. ft. (Figures 4 and 5). Turfgrass quality



**Figure 2.** Turfgrass color ratings for overseeded buffalograss when blue fescue was seeded in fall, fall/spring, or spring (i.e., 1-9 visual rating scale with 1 = straw brown and 9 = dark green).



**Figure 3.** Turfgrass species composition (i.e., percentage of each species) when blue fescue was seeded in fall, fall/spring, or spring.



and color ratings followed similar trends. Turfgrass quality ratings were highest for the 6.0 lbs./1,000 sq. ft. treatment (Figure 5). In Utah, fine-leaved fescue seeding rates of 2.0 and 4.0 lbs./1,000

sq. ft. in a buffalograss overseeding study resulted in similar shoot density and quality responses.<sup>3</sup> Shoot density seemed to stabilize around a 3:1 ratio of fine fescue to buffalograss shoots when

overall seeding rates and the entire growing season were considered (Figure 4). Fine-leaved fescue composition was highest in May and decreased while buffalograss increased from late spring to early fall.

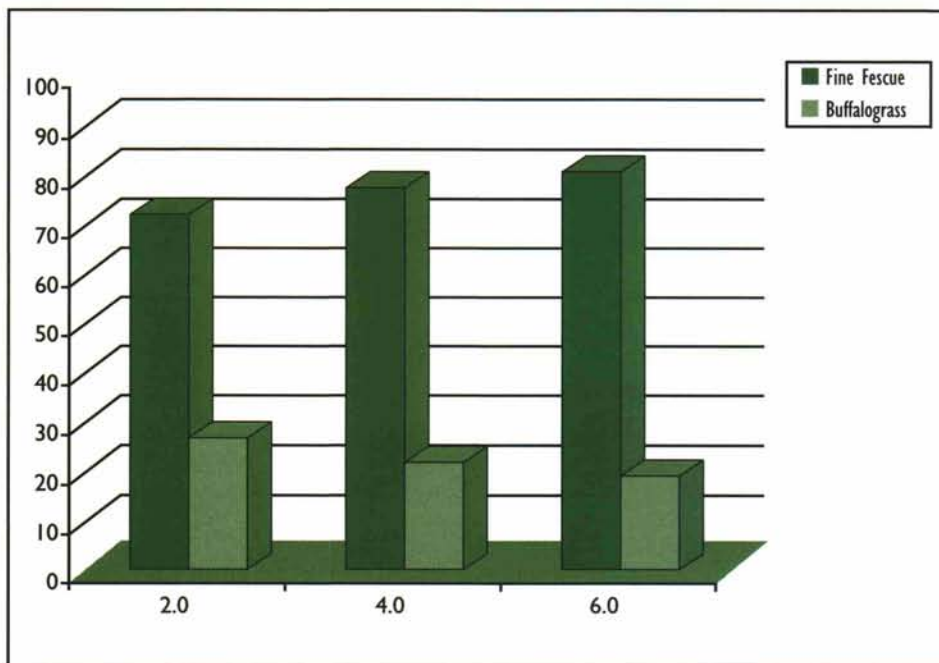
Recent trends in developing more aggressive, high-temperature-tolerant cool-season turfgrass cultivars may decrease the competitive advantage of warm-season turfgrasses during summer stress periods.<sup>5</sup> Two years after establishing these studies, fall overseeded blue fescue comprised 75% and buffalograss 25% of the turfgrass stand. This composition was slightly less than the > 80% fine fescue reported in the Utah study.<sup>3</sup>

### FAIRWAY OVERSEEDING RESULTS

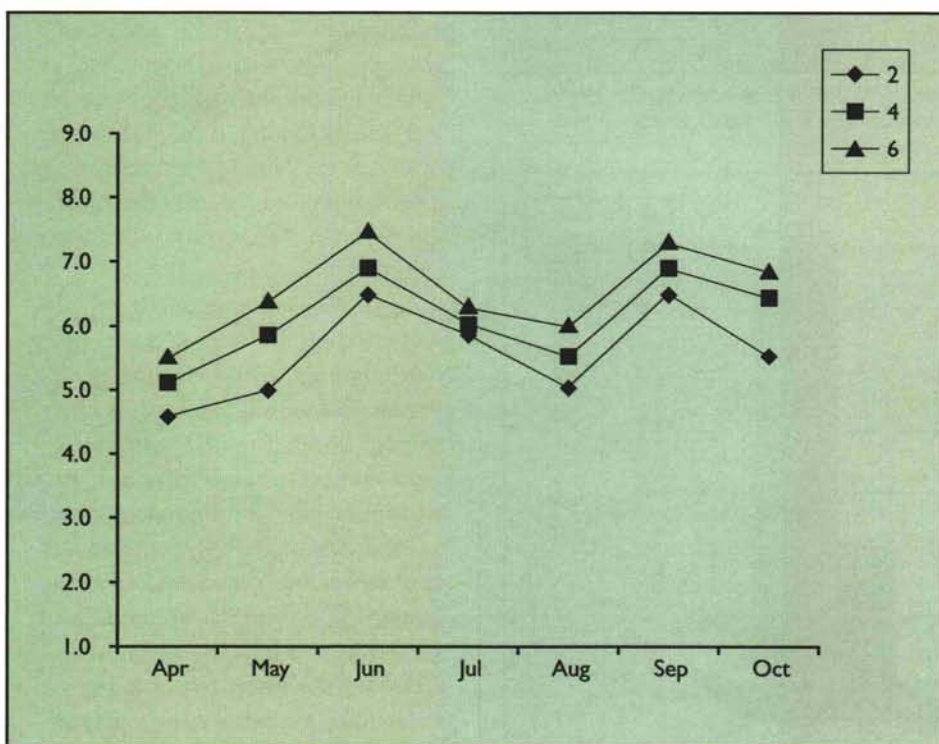
Overseeding buffalograss cultivars maintained under fairway mowing heights with Bighorn blue fescue resulted in improved turfgrass quality when compared to non-overseeded grasses (Figure 6). The Bighorn blue fescue seemed to blend well with the buffalograss from a color perspective. Turfgrass color and quality ratings were higher for turfs overseeded with 2.0 versus 1.0 lbs./1,000 sq. ft. of Bighorn blue fescue. Turfgrass quality ratings over the growing season differed by cultivar, with Prestige having the highest mean quality rating for the season (Figure 6). Prestige is a tetraploid cultivar that is planted vegetatively and has demonstrated earlier spring green-up when compared to the other cultivars tested in this trial. It also tends to hold its green color longer into the fall season.

Turfgrass color ratings taken in November 2005 demonstrated the benefit of overseeding buffalograss with blue fescue (Figure 7). The non-overseeded buffalograss color ratings ranged from 1.0 to 2.9 and represent the typical color of dormant buffalograss turfs, while the overseeded turfs had color ratings ranging from 5.0 to 7.1.

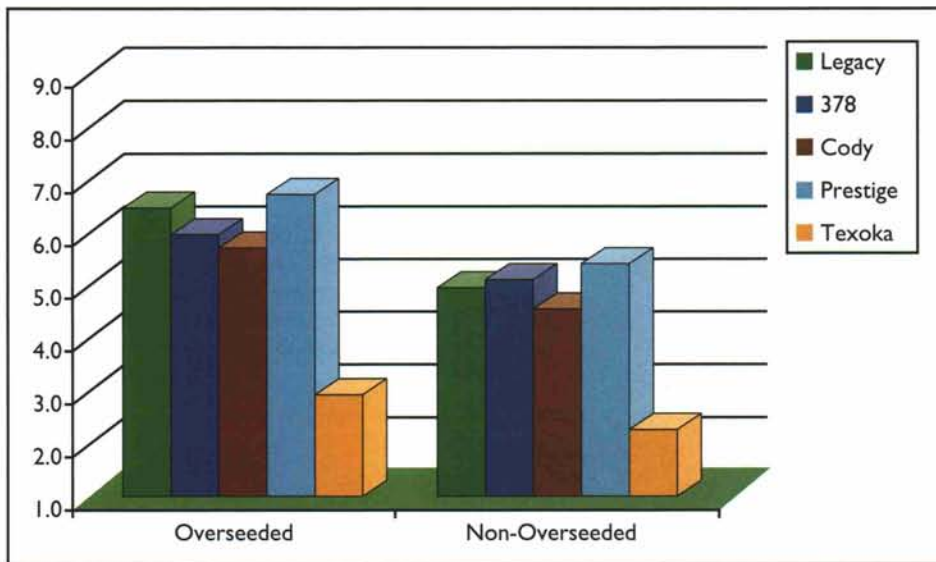
The results from the seeding rate and date studies and those from the fairway



**Figure 4.** Percentage of turfgrass species composition based on fine fescue seeding rates of 2.0, 4.0, and 6.0 lbs./1,000 sq. ft. (10, 20, and 30 g/m<sup>2</sup>).



**Figure 5.** Turfgrass quality ratings for overseeded buffalograss when fine fescue was overseeded at 2.0, 4.0, or 6.0 lbs./1,000 sq. ft. (10, 20, and 30 g/m<sup>2</sup>) (i.e., 1-9 visual rating scale with 1 = poorest and 9 = best).



**Figure 6.** Mean turfgrass quality ratings for buffalograss cultivars overseeded with Bighorn blue fescue in fall 2004 compared to those same buffalograss cultivars not overseeded with Bighorn blue fescue.

buffalograss trials indicate that buffalograss turfs overseeded with blue fescue in the fall provide improved quality and color and extend the green appearance both earlier and later in the growing season. Spring overseeding resulted in poor turfgrass establishment, lack of uniformity, and lower turfgrass quality ratings than fall or fall-spring overseedings. Turfgrass quality, color, and shoot density responded linearly to fine fescue overseeding rates for buffalograss maintained at rough heights of cut.

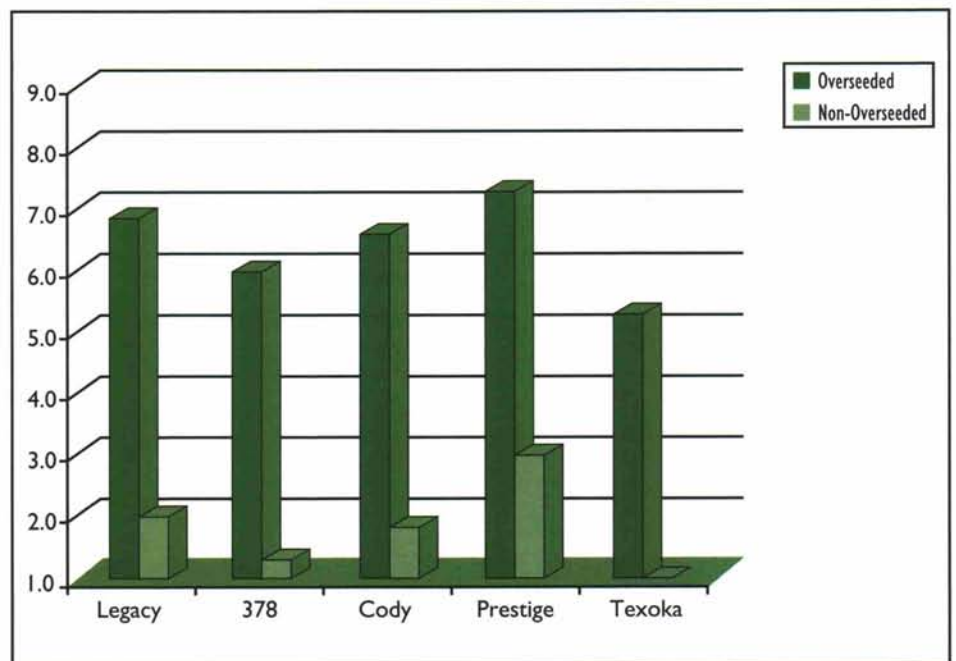
In the later fairway study, lower seeding rates of 1.0 to 2.0 lbs./1,000 sq. ft. of blue fescue provided satisfactory turfgrass quality ratings and extended turfgrass green cover well into November. Blue fescue overseeded in the fall extended the green cover response by more than two months in the rough-height-of-cut study. The results obtained in these trials support the use of blue fescue and buffalograss mixtures as a means of enhancing turfgrass color retention and prolonging the green cover response compared to non-overseeded buffalograss turfs.

#### ACKNOWLEDGEMENTS

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*Editor's Note:* A complete report of this study and other research can be found at *USGA Turfgrass and Environmental Research Online* (<http://usgatero.msu.edu>). The specific URL for this report is <http://usgatero.msu.edu/v05/n09.pdf>.



**Figure 7.** Turfgrass color rating of buffalograss cultivars overseeded with blue fescue and compared to those same buffalograss cultivars not overseeded. Ratings were made in November 2005 (i.e., 1 to 9 visual rating scale with 1 = straw brown and 9 = dark green).

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Research at the University of Nebraska demonstrates that buffalograss fairway and rough turfs overseeded with blue fescue in the fall provide extended green appearance and enhance turfgrass quality.



Buffalograss is a warm-season turfgrass that has extended winter dormancy when grown in northern climates. Mixtures of buffalograss and fine-leaved fescues (foreground) may enhance turfgrass color retention compared to buffalograss alone (background).



The blue-green color of blue fescue blends well with the color of buffalograss and provides a uniform turfgrass appearance. Fall overseeding of fine-leaved fescues was preferred to spring or fall/spring seeding. Note the difference in stand composition for the Chewings fescue established in the fall (upper left) versus spring (right).



**A Q&A with DR. ROBERT SHEARMAN, University of Nebraska, on the use of buffalograss on golf courses.**

**Q: What's the primary use for buffalograss on golf courses, and do you think the use of buffalograss on golf courses will increase in the future?**

**A:** Buffalograss is most suited for use on golf course roughs, fairways, and tees, and has turfgrass characteristics similar to bermudagrass. I believe buffalograss use on golf courses will increase in the future, particularly as we develop even more improved cultivars and as water restrictions become increasingly more common.

**Q: In this series of experiments, you showed that blue fescue mixes better with buffalograss than other cool-season grasses. What's the primary reason?**

**A:** We selected blue fescue for a number of reasons. First, blue fescue is a cool-season turfgrass species that grows best in the spring and fall, which are times when buffalograss is only slowly growing or dormant. As a cool-season species, blue fescue is stressed by high temperatures and grows slowly during the summer, when buffalograss is actively growing. Second, we knew that the color and texture of blue fescue would mix well with buffalograss. Finally, we also knew that blue fescue required few inputs in regard to water and nutrients, similar to buffalograss. Finding suitable mixtures of warm- and cool-season turfgrass species is not easy, but these two species seem to be compatible.

**Q: Buffalograss is a very drought-tolerant species and requires little irrigation. Do you think overseeding blue fescue into established buffalograss requires over-watering the buffalograss to maintain the fescue?**

**A:** Buffalograss certainly is most suited to reduced water inputs, but, within reason, it responds to irrigation. The water required to establish the blue fescue did not impede the buffalograss in these

studies, and I don't believe it would be a factor in maintaining the desired characteristics of buffalograss in these mixtures.

**Q: How much longer can the color be extended by overseeding blue fescue into established buffalograss?**

**A:** We extended turfgrass color by two months with this mixture. The fall and spring appearance of the buffalograss-blue fescue mixtures was similar to that of other cool-season turfgrasses growing in adjacent studies.

**Q: Given the obvious positive traits of buffalograss, why hasn't it caught on more on golf courses across the country?**

**A:** The acceptance of new turfgrass species is often slow. Buffalograss is competing for acceptance with species that have had decades of improvement and use. We've only been working with buffalograss for slightly more than 20 years, which is a relatively short time. Even so, the potential for buffalograss use on golf course turfs is very strong, particularly as we look to the future and the water restrictions that we will be facing. All of this said, buffalograss is not perfect. It has an extended winter dormancy period that limits its acceptance by many users. Vegetative cultivars, like Legacy and Prestige, must be planted from sod or plugs. This limits their use on large areas like fairways and roughs. Seeded cultivars, like Bowie or Cody, are more suited for establishment on large areas like roughs, but their turfgrass characteristic qualities are not as high as those of the vegetative cultivars. These limitations are not insurmountable, and our breeding program is addressing many of these concerns. We are selecting for improved spring green-up and fall color retention, and we have made strides in increased seed yield potential and improved turfgrass quality of seeded types. I believe we need to be patient and continue to move forward. Buffalograss is a species that will play a significant role on golf course turfs in the future. I believe this is the very near future.

JEFF NUS, PH.D., *manager, Green Section Research.*