

Final Report:

Using a Buffalograss and Fine Fescue Mixture as a Long Term Alternative to the Traditional Lawn for Improved Resource Management

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The first phase of the buffalograss establishment study (see attached proposal), conducted from 2007 to 2009 at the California Polytechnic State University Horticulture Unit in San Luis Obispo, California and funded by the California Landscape Contractors Association, has now been completed. Comparisons were made between mixtures of eight cultivars of buffalograss (four vegetative cultivars were - Prairie, Prestige, UC Verde, 609; four seeded cultivars were - Bowie, Cody, Texoka and Bison) and three fine fescue species (Hard fescue, Sheep fescue and Red fescue). The objectives of this research were to determine the best combination of buffalograss and fine fescue species for the Central California Coast and, ultimately, to examine management strategies that promote year round turfgrass quality and color in these mixed stands. The goal was to provide the turfgrass practitioners of California alternatives for home and commercial lawns that do not require high resource needs.

The vegetative buffalograss cultivars were planted the week of July 2, 2008 into three pre-established fine fescue subplots established in the fall of 2007. On July 14, 2008 the four seeded buffalograss cultivars were seeded into the remaining unplanted plots. The experiment was a split-split plot design with repeated measures over time.

Data was collected in 2008 from July 19 to November 5 and again from April 8 to November 6 in 2009. These data were analyzed using SAS 9.1 for Windows using split-plot with

repeated measures analysis. Preliminary statistical analysis of the data shows differences in percent coverage, or rate of spread, among the vegetative buffalograss cultivars.

In all three replications it appears the buffalograss cultivar UC Verde had a significantly higher percent living ground cover compared to the other vegetative cultivars. UC Verde seems to be an aggressive competitor with fine fescue species compared to the others tested. The cultivar Prestige had the lowest percent coverage of the four tested.

The cultivar 609 seemed to have better establishment success than either Prestige or Prairie and further statistical analysis will reveal the final placement results of each the experiment units as regards to percent living ground cover, or rate of spread, of the buffalograss.

After two seasons we were not able to find any live buffalograss in our seeded plots. We concluded, therefore, that none of the seeded buffalograss cultivars germinated in either growing season. Because of the slow germination potential of buffalograss and the competitiveness of the fine fescue, we concluded that it is not possible to establish buffalograss in an existing turfgrass stand by seed. This is especially true within an aggressive species like fine fescue. We believe that we never achieved the proper seed to soil relationship and we could not adequately water the seed (to start germination) before we had a “saturated” state in the fine fescue and a gradual weakening of the stand.

Our recommendation is that to use a seeded buffalograss cultivar you must establish the buffalograss first starting in May-June. After the buffalograss is established (complete coverage) the fine fescue could be seeded in September-November like you might overseed perennial ryegrass into bermudagrass.

We can also conclude from this work is that it is not very practical, nor functional to try and establish a slow growing turfgrass species like buffalograss into pre-established fine fescue species in order to establish a year-round high quality turfgrass for the California central coast region unless time is not an issue. At the end of two seasons we felt the buffalograss stand (percent coverage) in the fine fescue species was at best incomplete. This resulted in a patchy appearance and possibly, to most, an undesirable turf stand. This was especially true with the

red and hard fescue as their color differences with the buffalograss was most distinct (qualitative analysis). The buffalograss and sheep fescue were best matched and did not appear to be as “patchy”.

Establishing a poly-stand of fine fescue and buffalograss by plugging buffalograss into existing fine fescue can be done but it is a slow process that will take at least two growing seasons to complete if not more. For most, this would be too long a period.

However, even though the buffalograss was patchy and was not considered uniform at the end of the second season, if a landscape contractor or home owner had the patience, this method could prove useful for turfgrass practitioners with **pre-existing**, cool season, fine fescue lawns but desire to convert to a mixed cool season- warm season grass lawn as a conservation measure. It is a slow process but does work.

To conclude, as irrigation becomes more restricted we may be forced to find alternative practices and species that provide healthy and practical ground cover for the landscape. Buffalograss is an improved fine textured drought tolerant warm season turfgrass species and is morphologically very similar to fine fescue. Work at the University of Nebraska, Lincoln has shown that these two species are very compatible, especially when mowed at two to three inches. Our data shows that buffalograss can be inter-planted with fine fescue but will take at least two seasons to provide significant coverage.

Finally, we will now begin exploring long term management strategies to maintain these mixed stands for future stand quality. Our objective will be to test different management practices that will balance the growth and ultimate success of each species including mowing height, fertility and cultivation.

Attachment:

Proposal for Funding:

Using a Buffalograss and Fine Fescue Mixture as a Long Term Alternative to the Traditional Lawn for Improved Resource Management

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Buffalograss (*Buchloe dactyloides*) is a warm season grass native to the Great Plains of North America. Its natural range extends from the prairies of Canada down and through the hot dry plains of Mexico. It has remarkable drought and cold tolerances allowing it to survive extreme summers and winters in its adapted areas.

Buffalograss is a low growing perennial reaching only six to eight inches when left unmowed. It has little need for irrigation, fertilizer and the need for pest control is minimal because it does not suffer from many pest problems. Because of this, and the fact that it has such a slow growth rate, it is a very good lawn cover for low maintenance landscapes.

Buffalograss is adapted to wide range of mowing heights from as low as one inch to the recommended heights of three to four inches (Johnson et. al., 2000). When the height of cut is maintained at three to four inches, however, mowing frequency can be maintained on a schedule of as little as one mowing per every 20-30 days.

A significant drawback to using buffalograss in the landscape, however, is that, as a warm season grass, it goes dormant during the winter months. The brown-tan turf color during these periods is an objectionable characteristic that leads many home and commercial landscape

owners to choose less maintenance free choices for their turfgrass needs. Most resort to using species like perennial ryegrass and tall fescue which require more in resources and culture for survival.

Overseeding for winter color is an option but again, does not fit into a “low” maintenance program when using buffalograss. The quality of the turf, the cost and the effort to overseed annually makes this an unacceptable option.

Researchers at the University of Nebraska have shown that an acceptable stand of buffalograss and fine fescue can be established and maintained successfully year round in the Great Plains states (Sherman et. Al., 2006). They were able to overseed chewings red fescue (*Festuca rubra* ‘Commutata’), sheep fescue (*F. ovina*) or hard fescue (*F. trachyphylla*) into existing stands of buffalograss and, therefore, maintain good stand quality throughout the year.

The objectives of this research are to determine the best combination of buffalograss and fine fescue species for the Central California Coast and to examine management strategies that promote year round turfgrass quality and color in these mixed stands. The goal is to provide the turfgrass practitioners of California alternatives for home and commercial lawns that do not require high resource needs.

Materials and Methods

Initial experiments will be designed to examine mowing height affects on three different fine fescue selections. The research will be conducted at the turfgrass plot area located at the Horticulture Unit located on the Cal Poly Campus.

Mixed stands of buffalograss and fine fescue will be established in a replicated design that will encompass eight different buffalograss cultivars selected from the 2005 NTEP trial data (Main blocks: 24 blocks total – 8 cultivars x 3 replicates). Three species of fine fescue will be inter-seeded into each block (see attached plot design).

Two mowing height treatments (2" and 4") will be applied in a split-split plot design across all species of fine fescue. Plots will be fertilized with Milorganite (6-2-0) at the rate of three lbs N per year (1/2 lb every 4 months starting in April). One half lb of potassium will be applied as potassium sulfate each time the Milorganite is applied.

Irrigation will be applied as needed to keep the turfgrass species actively growing.

Buffalograss Plots

Eight cultivars X three replications

