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## Breeding Improves Fine Fescue Varieties

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By: [Leah A. Brillman](#)  
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The left-hand plot has been endophyte-enhanced while the right-hand plot has not. Endophytes enhance turfgrass' ability to battle diseases such as dollar spot.

Improved fine fescues should be used more extensively in this country for fairways, homes and roadsides.

Through biotechnology and breeding on other species, we try to capture what we already have in improved fine fescues: low maintenance turfgrasses with reduced needs for fertilizer, nitrogen and irrigation. Yet, most consumers, whether homeowners, landscape contractors or superintendents, associate fine fescues only with turfgrass mixtures intended for shade sites.

Although the most appropriate use for older or common fine fescue varieties may have been for these shady sites, turfgrass breeders have made significant advances in new fine fescues, making them appropriate for many additional sites, both high and low maintenance.

Despite these dramatic differences in performance, the availability and cheap price of many of these older and common fine fescues have led to their continued use in turfgrass mixtures and have limited the commercialization of many of the improved fine fescue varieties. Increased use of the improved cultivars will increase breeding efforts of these valuable species.

Fine fescues are low-maintenance turfgrass species requiring less fertility, irrigation and mowing than many other turfgrass species. This has been demonstrated by their excellent performance on roadsides and as orchard cover in many areas. The newer cultivars can be used in full sun much further south than earlier varieties.

**Endophyte presence** These expanded uses may be due to the presence of endophytes in the new cultivars, which provide protection against many surface feeding insects, increase dollar spot resistance and increase summer stress tolerance.

An additional characteristic of fine fescues, useful in many situations, is their tolerance to the herbicides sethoxydim and fluazifop, enabling the removal of certain weeds and grasses from these stands (labels should be followed for this use).

Fine fescues prefer lower nitrogen levels than many turfgrasses. In fact, high levels of nitrogen can cause excessive thatch development and decrease their heat tolerance.



Table 1

**Brief taxonomy** Fine fescues include many species of turfgrasses characterized by their fine leaf texture, generally (less than one-third of an inch) and are included in the Festuca subgenus of the Festuca genus. The species are divided into two major complexes: the red fescue complex and the hard/sheep fescue complex. Taxonomy within these complexes remains under debate, and you may find many scientific names for each species in the literature. The following are the most recently accepted names but may still change over time.

The red fescues include the traditional turfgrass species, which include Chewings

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fescue, strong creeping red fescue, and slender creeping red fescue.

The members of the hard/sheep fescue complex that have been used for turf include hard fescue, sheep fescue, blue sheep fescue, fine-leaved sheeps fescue and Idaho fescue.

The two most important characteristics used to distinguish the two complexes based on Stace et al., 1992 are as follows:

**Red rescue complex:** Sheath of young tiller-leaves fused into a tube almost to top; some or all tillers extravaginal.

**Hard fescue complex:** Sheath of young tiller-leaves with at least the upper 40 percent with free, overlapping margins; all tillers intravaginal.


Additional characteristics, such as placement and number of sclerenchyma bundles in leaf cross-sections, width and folding of leaves, presence and absence of rhizomes and chromosome numbers, further divide these complexes. The taxonomy of these species is difficult, and correct names and designations of subspecies are still being debated. Here are the different varieties within those species.

**Chewings fescues** Chewings fescues derive their common name from George Chewings, who exported seed with his name from New Zealand to many areas of the world (Morgan, 1998). It's probably one of the most versatile of the fine fescues being used for greens, fairways and roughs of golf courses; home lawns in sun and shade; highway roadsides and orchard covers; and in overseeding of warm-season turfgrasses as well. It's a bunch-type grass that germinates and establishes quickly.

Chewings fescues have seen significant improvements in heat and drought tolerance, seed yield, dwarf growth form, dark green color and disease resistance primarily against red thread, brown patch and dollar spot.

Improved cultivars have shown good performance in Arkansas, North Carolina and other areas in the Southern transition zone in full sun. In a trial at low pH, with no irrigation and low mowing height at Georgia's Griffin Research Station, SR 5100 and Bridgeport maintained 50 percent cover over three years, which would have been considered impossible a few years ago (1993 Fineleaf Fescue NTEP study results).

In the 1998 NTEP results, Chewings fescues have done the best of the fine fescues when managed under high input as a fairway grass, both with and without traffic. They show good resistance to summer patch, which limits the use of some fine fescues in heavy wear or compacted areas. Overall, they show the most consistent performance under high to low management.

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#### About the Author

**Leah A. Brillman**

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