

Forage fescues for the North

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Tall fescue, meadow fescue and festulolium have potential value as forages for grazing operations in the northern USA. Meadow fescue is the most cold tolerant of these grasses, with excellent forage quality and palatability and relatively high drought tolerance. Tall fescue has the highest yield potential, good palatability for soft-leaf varieties and excellent heat and drought tolerance. Festulolium exhibits high forage quality and good summer production. A cold-tolerant festulolium variety has been bred for Wisconsin.

Tall fescue has earned a poor reputation in the USA for causing disease in livestock. Most fescues contain a naturally occurring fungus called an endophyte. Each species of fescue has its own unique endophyte. The endophyte produces two types of alkaloids that are released into the plant: lolines and ergovalines. Lolines protect the plant from drought, heat and predation by insects, but do not cause livestock health problems. Ergovalines protect the plant from grazing and can cause health disorders such as leg and foot ailments, loss of balance and digestive problems. While tall fescue endophytes produce both lolines and ergovalines, the meadow fescue endophyte does not produce the ergovaline alkaloid that makes livestock sick. And meadow fescue cannot become infected with the harmful endophyte found in tall fescue.

Meadow fescue

In 1990, Charles Opitz of Mineral Point, Wisconsin, discovered an unknown, highly palatable grass growing in a remnant of the oak savanna ecosystem on his farm. Opitz soon realized that this grass was unique. USDA-ARS and UW-Madison researchers eventually identified the mystery grass as meadow fescue. Further research has identified old meadow fescue stands on hundreds of farms in the Driftless Region of southwestern Wisconsin, northwestern Illinois, northeastern Iowa and southeastern Minnesota.

Meadow fescue, which comes mainly from northern Europe and mountainous regions of southern Europe, arrived in the Driftless Region at least 100 years ago. But by 1943, tall fescue was the fescue of choice in the USA due to its higher forage yields and superior disease resistance. By the early 1950s, meadow fescue was essentially forgotten in the USA.

Meadow fescue reappeared on the research scene after the managed grazing movement of the 1980s gained momentum. A meadow fescue breeding program was initiated at the University of Wisconsin and the USDA-ARS. This program first bred 'Azov' meadow fescue for high forage availability under managed grazing. 'Hidden Valley' meadow fescue was later developed from plants collected on the Opitz farm.

When cut six times per year, 'Hidden Valley' and 'Azov' meadow fescues yielded slightly less forage than both tall fescue and orchardgrass, but more forage than the European 'Bartura' meadow fescue. 'Azov' meadow fescue consistently yielded more forage than 'Hidden Valley'. This was likely due to the intensive selection for high forage yield under managed grazing. Meadow fescue is well suited to frequent, managed grazing, but not as well suited as taller grasses to hay management systems.



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Tall fescue

Tall fescue deserves greater consideration for pastures in northern states than it has received in the past. While tall fescue is the dominant cool season grass in the southeastern USA, it is not widely grown in Wisconsin due to animal health concerns. Removal of the fungal endophyte is a solution to the disease issue. The authors have observed no effect of fungal endophytes—either toxic or animal friendly—on persistence or yield of tall fescue in Wisconsin.

When managed for hay or pasture, tall fescue is among the highest yielding perennial grasses grown in Wisconsin. The greatest yield advantage usually occurs in mid-summer and autumn, when the productivity of other grass species tends to slump. Laboratory measures of forage quality show tall fescue to be no better or worse than other grasses, so greater yield should equate to greater per-acre meat or milk production.

Wisconsin research has demonstrated that cattle prefer grasses other than tall fescue when offered a choice. Older tall fescue varieties have stiff leaves with barb-like projections on the edges, but new varieties with softer leaves are currently on the market. While no published data document improved palatability of soft-leaf fescues, unpublished observations suggest that some of them are indeed more palatable.

Forage intake and milk production on pastures planted to endophyte-free tall fescue and kura clover were studied at the UW-Madison Arlington Agricultural Research Station. Results indicated that there should be no concern about pasture intake or milk production by dairy cattle on endophyte-free tall fescue. In another research project at the Arlington Station, beef steers gained approximately 22 percent more weight per acre on tall fescue compared to orchardgrass.

Steer gains per acre on pastures at Arlington, Wisconsin. Values are means over 3 years.

Pasture treatment	Steer gain/acre (lb/a)
'Orion' orchardgrass	560
'Select' tall fescue ¹	700
'Vulcan' tall fescue ¹	670
'Vulcan' tall fescue + 'Endura' kura clover ²	765

¹Both tall fescue varieties are endophyte free. 'Select' is a stiff-leaf variety and 'Vulcan' is a soft-leaf variety.

²Kura clover made up approximately 50% of this mixture averaged over seasons and years.

Festulolium

Festuloliums are hybrid crosses of ryegrasses and fescues. Most of these crosses were made by European plant breeders who selected plants that had the physical appearance of ryegrasses, but with the improved stress tolerances of fescue. In the USA, plant breeders used the opposite approach, transferring the superior palatability and digestibility of ryegrass into tall fescue. Following research trials in the late 1980s, Wisconsin breeders developed the 'Spring Green' festulolium variety that could survive Wisconsin's harsh winters.

As fescues gain popularity in grazing operations in the northern USA, interest and local knowledge of their culture and management continue to increase. Seed companies have made additional varieties available within this region. Forage fescues have a bright future in managed grazing systems in the northern USA.

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