



Fine fescue performs quite well in unmowed roughs where cart traffic is prohibited and where the irrigation management, soil type, and climate favor this species. Pay attention to its needs and fine fescue can greatly enhance the appearance and playability of a golf course.

Fine Fescue Roughs and Fairways

Green alternative or niche grass?

BY ROBERT VAVREK

Who doesn't want to be green these days? The concept has become quite fashionable and downright patriotic.

Going green includes, but is not limited to, modifying our lifestyles to rely more on alternatives to fossil fuel, to conserve water/electricity, and recycle/reuse natural resources as much as possible. Perhaps in its simplest and most idealistic form, going green will help save the planet with the added bonus of saving you money. The presence of an entire cable television channel dedicated to a "green" lifestyle is a good indication that this concept is firmly entrenched in today's society.

Ironically, an effective way to go green on a golf course is to go brown. Keeping the course as dry as possible is beneficial to the budget, the players, and the environment. Limiting irrigation conserves water and electricity. Dry, lean, dormant, or semi-dormant playing surfaces require fewer mowing operations and are less susceptible to disease activity, thus reducing

inputs of plant protectants, fuel, and labor. Moreover, dry fairways provide golfers a firm, consistent playing surface and the additional roll coveted by novice and expert players alike.

Sounds easy, but turning a course brown to go green isn't quite as simple as switching to fluorescent light bulbs or installing a low-flow shower head in your bathroom. The species of cool-season grasses commonly used in the U.S. for fairways and roughs vary in their ability to survive the risky process of limiting inputs of irrigation, plant protectants, and fertilizer, especially during the stressful heat and high humidity of midsummer.

Be stingy with irrigation applied to mature creeping bentgrass or Kentucky bluegrass fairways and the turf remains relatively healthy. Granted, overstressing these grasses with inadequate irrigation during hot, dry weather may occasionally result in turf injury, but most of the time the brown, dormant grass can be nursed back to health. In contrast, this same



Seedheads flowing in the gentle breeze is the idyllic perception of a naturalized rough. In reality, a thick stand of grass can be knocked over by heavy wind or rain and not recover.

midsummer management philosophy applied to a predominantly *Poa annua* fairway can easily result in severe losses of turf. Go brown on a *Poa* fairway and you will realize the true meaning of *annual* bluegrass while waiting a year for it to recover.

THE FINE FESCUE OPTION

At first glance, fine fescue turf is ideally suited for a golf course desiring low-input playing surfaces. The term “fine fescue” describes a group of at least five closely related, fine-bladed grasses in the genus *Festuca* that have similar desirable characteristics, such as persistence under low fertility and tolerance to shade and drought. Many plant breeders categorize the fine fescues into two groups based on growth habit. Chewings fescue, sheep/blue fescue, and hard fescue have a bunch-type growth habit. Strong creeping red fescue and slender creeping red fescue are rhizomatous.

Within the past 20 years or so, several breeding programs have developed varieties of fine fescue that have improved disease resistance and the ability to maintain acceptable density at fairway heights of cut. In addition, plant breeders have released varieties of fine fescue that possess high levels of symbiotic endophytic fungi that, among other benefits, greatly increase resistance to insect pests and diseases such as dollar spot and red thread.^{1,2}

Historically, fine fescues have been used to establish golf course roughs in blends with Kentucky bluegrass and perennial ryegrass.

The fescue component of the mixtures dominates in sites where sunlight, irrigation, and fertilizer inputs are limited. Naturalized areas of unmowed fine fescue provide the trademark wispy roughs of familiar classic golf clubs such as Shinnecock Hills and Pine Valley.

Contemporary golf course architects have designed courses with vast acreage of unmowed fescue roughs to help define the strategy and enhance the appearance of the layout. Perhaps spurred on by the desire to produce the ultimate environmentally responsible courses in America, a small, but increasing number of architects have gone one step further by specifying pure stands of fine fescue for unmowed roughs, mowed roughs, and fairways. But have they gone too far, expecting a species of low-input grass to perform at a high level that meets the ever-increasing expectations of golfers, and are the significant limitations of fine fescue being obscured by “green” colored glasses?

FINE FESCUE PERCEPTION

To the avid American golfer, the thought of fine fescue playing surfaces conjures up idyllic images of St. Andrews Golf Links, Carnoustie, and other legendary venues of the British Open Championship. They watch in awe during the wee hours of the morning as the competitors shape low line drives into the teeth of the ever-present wind and marvel as the ball ricochets sharply off the brown turf in a puff of dust and then rolls an additional 50–75 yards toward the hole. These firm, brown fairways make them green with envy when they recall how their last solid contact with a driver at the local course yielded only a net 239 yards when the 240-yard drive plugged in soft, moist turf and then backed up a foot.

Many avid golfers desire the playing conditions they perceive exist for day-to-day play on a Scottish links course. The perception is based on television coverage and, if fortunate, a rare golf excursion to play a round or two overseas. This supports an erroneous assumption that similar conditions can exist on courses throughout the United States by simply planting fine fescue and then turning off the water. However, there are more than an ocean of differences between the average golf course and golfer in the U.K. and their counterparts in the U.S.

Why is fescue so successful on U.K. courses? Keep in mind that what we perceive as pure fine

fescue turf in the U.K. is typically a mixture of fine fescue and browntop (Colonial) bentgrass. This duo produces a relatively uniform stand of turf, though the ratio of fescue to bentgrass will vary throughout the sward, according to growing conditions. Fescue will dominate where the turf is driest and subjected to the least amount of wear, and the bentgrass will dominate where more water and traffic exist. For the sake of argument, let's assume a high percentage of fine fescue exists on a Scottish links course and discuss factors that favor fine fescue.

ENVIRONMENT, ECONOMICS, AND ATTITUDE

The courses in the U.K. most familiar to Americans are located adjacent to or very near the ocean. The maritime climate at, for example, St. Andrews Golf Links, is mild and relatively consistent throughout the year compared to our weather. The native soil is infertile dune sand that drains extremely well. Many days are cloudy and turf is rarely stressed by heat or high humidity. These growing conditions that favor fine fescue are rarely found in this country, with the exception of a few coastal locations in the northeast or northwest and perhaps the localized area of sand dunes immediately adjacent to Lake Michigan.

Green fees and the cost of memberships at a high-quality links course are very reasonable in the U.K. The average Joe can join a parkland course for summer play and a coastal links course for winter play and not break the bank. Golf is a walking game in the U.K. Few courses have any riding carts and, consequently, cart revenue is nonexistent. Relatively little annual cash flow into a club provides equally little opportunity for high-cost maintenance or high-input grasses.

Finally, the average golfer in the U.K. has a completely different attitude regarding the game compared to the typical serious American player. Green fees there are reasonable and so are the expectations. Perfect, "cookie cutter" conditions on every hole are not required or desired for day-to-day play. Rarely do you detect our incessant obsession for consistency. Bunkers are hazards to be avoided and a good lie in the sand with an opportunity to advance the ball toward the hole is generally considered good fortune. They look forward to playing the same course under the same conditions experienced by their

fathers and grandfathers. Call it tradition, which is a far cry from our players' irrational "blame it on the course" attitude and never-ending efforts to elevate a particular course up to a higher level of conditioning.

Many American golfers believe they are entitled to a perfect lie in a fairway, a perfect lie in a bunker, a perfectly level tee, an easy recovery from an errant shot from a uniform rough, and putting on a green having the consistency of a receptive billiard table with incredible speed that varies no more than six inches throughout the season. It begs the question of whether we are capable of accepting a low-input grass for fairways or roughs.



Yet, the fact remains that fine fescue performs quite well in the U.K., Denmark, Sweden, and other countries where climate, soil type, economics, golfer attitude, and environmental restrictions/regulations favor its use. A low-input turf can provide consistent playing conditions in the U.S. as long as the needs of the grass are addressed and take precedence over expectations for perfection. Avoid the following pitfalls to give fine fescue a fighting chance to survive and thrive on our fairways and roughs.

DRAINAGE AND IRRIGATION

Fine fescue requires a well-drained soil for optimal performance. It will survive in heavier soils but has difficulty competing with other grasses and weeds where plenty of moisture is available. Fine fescue has no chance of being the

Western spotted knapweed, milkweed, thistles, and other aggressive weeds can quickly choke the life from slowly growing turf in a natural rough. Keeping weeds at bay with herbicides, hand removal, or annual mowing operations is an important component of a successful natural rough management program.

dominant turf species in a chronically wet area of the course.

It should come as no surprise that fine fescue fairways and roughs established on heavier silt loam or clay loam soils in the U.S. have not performed to expectations. Where rainfall is plentiful, simply reducing irrigation across heavy soils generally won't produce the consistently dry conditions required for fescue to successfully compete with grasses such as Kentucky bluegrass, creeping bentgrass, *Poa annua*, and *Poa trivialis*.

Any species of turf growing in chronically wet, compacted soil versus well-drained soil will be more susceptible to problems, including winter injury, wet wilt, rutting from carts/maintenance equipment, and diseases such as summer patch and Pythium blight. Fine fescue has a slow rate of growth compared to bentgrass and other species commonly found on fairways and roughs. As a result, any significant damage or divots will be very slow to recover.

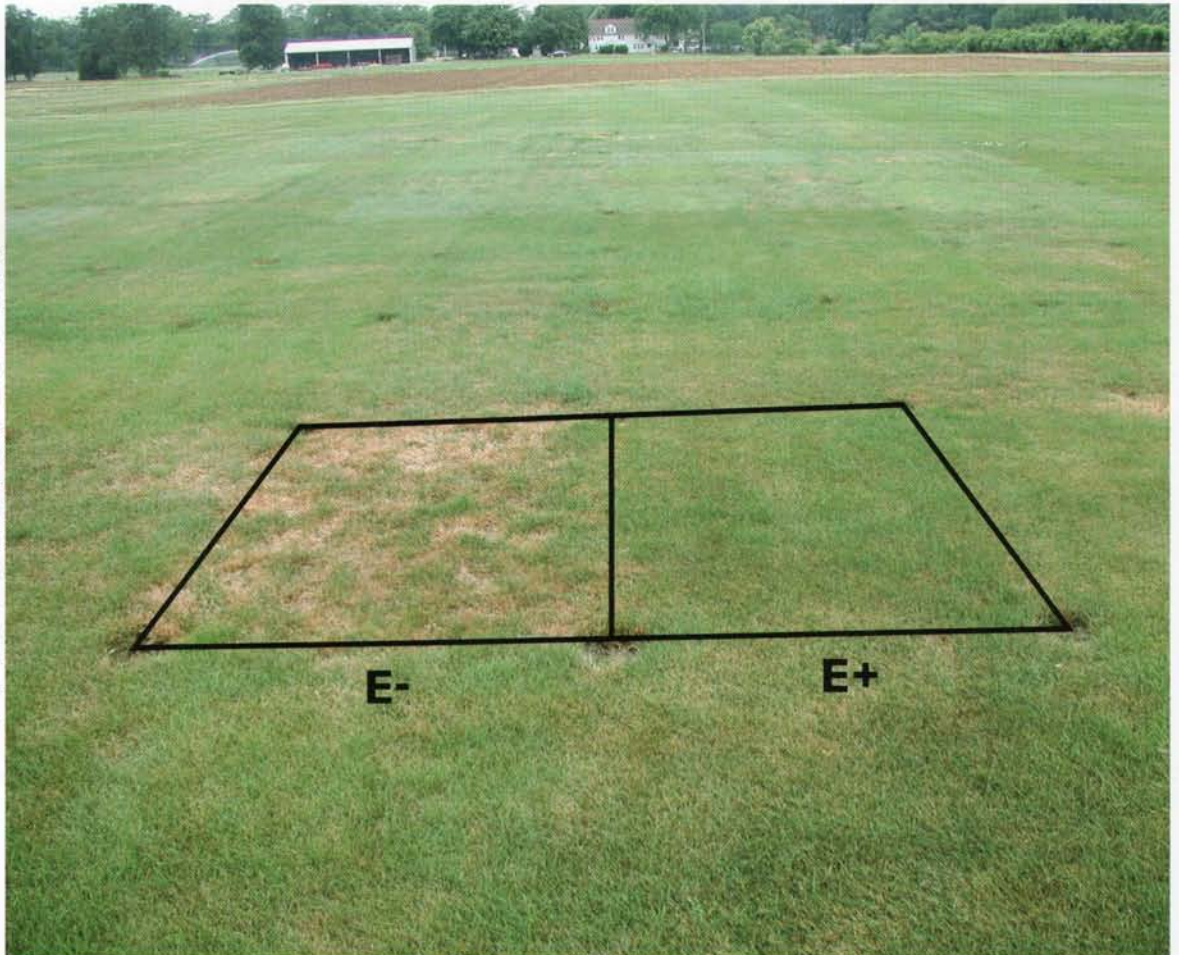
The presence of suitable soil conditions does not guarantee success with respect to fescue management; it only provides the opportunity.

There must be willingness and commitment to greatly reduce supplemental irrigation once the turf becomes well established. Golfers embrace 20 to 30 yards of additional roll and firm footing, but they can be slow to accept the color of brown turf. If you are convinced that emerald green turf is necessary to attract and retain golfers, then fine fescue fairways are not for you. The bottom line is that nothing ruins a high-quality stand of fescue faster than excessive amounts of water, regardless of whether the water comes from frequent rainfall, overwatering, heavy/poorly drained soil conditions, or any combination of these factors.

TRAFFIC, DIVOTS, AND THE FINE FESCUE PARADOX

American golfers will never reap the full benefits of low-input, fine fescue fairways and roughs until the issue of slow recovery from divots and cart traffic is acknowledged and addressed. We strive to establish a lean, firm playing surface with minimal encroachment from undesirable grasses and weeds. Then we literally wear the

Fine fescue varieties are available with sufficient levels of beneficial endophytes that can increase resistance to diseases such as red thread and make the turf unpalatable to insect pests. The research turf plot on the right with little injury from red thread disease has endophytes, but the turf on the left does not. Photo courtesy of Rutgers University.



grass off the course with 200+ rounds of motorized cart golf per day and have the unreasonable expectation for the turf to recover overnight from traffic and divots.

Golf is a game, but the management of a public or private golf course is a business. Motorized cart fees are a significant and essential source of revenue to the vast majority of courses in the U.S. In fact, courses exist in resort areas that were purposely designed to be played from a riding cart, and walking is neither practical nor permitted. Thus the paradox . . . we want carts and the revenue they provide and then expect a semi-dormant, slowly growing grass to accommodate our desire for perfection.

Golfers and greenkeepers of the coastal links understand, accept, and address the needs of low-input turf. A case in point: when the fairway turf is dormant for several months during winter, golfers at many links courses are required to lift a ball from the fairway and place it on a small square of artificial turf prior to hitting the next shot. This widely accepted practice protects the turf from divots at a time when recovery occurs very slowly. No doubt, we have much to learn regarding low-input turf.

FESCUE-FRIENDLY TIPS: CHOOSE WISELY

Consult National Turfgrass Evaluation Program (<http://www.ntep.org/>) information to determine the appropriate varieties and species of fescue to use for your particular location. Use fine fescues that have a high level of endophytes for improved resistance to insect pests and diseases. Try to use fine fescue seed within six months of harvest, because the percent of seed germination and the level of endophytes in seed rapidly decline with age.³ Mixtures of fine fescue and Colonial bentgrass are preferred to seeding straight fescue. The bentgrass will dominate in



The American perception of firm, fast fairways dominated by fine fescue often comes from television commentary at the British Open Championships held at coastal, links courses in the United Kingdom. The climate, soil type, low-input management practices and absence of motorized cart traffic all contribute to their ability to maintain exceptional playing surfaces that have a high percentage of fine fescue.

areas that receive more water and traffic, while the fescue will dominate in the high, dry sites. When it comes to low input, two species are better than one.

ESTABLISHMENT

Fine fescue has the same critical needs for timely irrigation and fertilizer during grow-in as bentgrass, Kentucky bluegrass, or any other cool-season grass species. Do not limit inputs of water and nutrients during establishment. Use a standard soil test to determine pre-plant fertility needs.

Fescue germinates quickly but is quite slow to tiller and mature. Reduce water and nutrients only after the stand of turf has become well established. Avoid the far too common mistake of opening for play before the turf can accommodate the traffic and wear associated with day-to-day play. Excessive wear on immature fescue can result in rapid encroachment by weeds and undesirable grasses.

TURN THE WATER OFF

Once an acceptable level of turf density is achieved, the only way to maintain a high percentage of fine fescue in the sward is to limit irrigation. Choose another grass if you are not willing to shut the water off. Take into account the potential relationship between soil type and the rate/frequency of rainfall when considering the use of a grass that must be kept as dry as possible throughout the season. Attempts to maintain fine fescue on heavy soils, especially soils subjected to frequent rainfall, will likely fail. Don't force a round peg into a square hole.



Turning off the water is an absolute necessity when managing fine fescue. Something as simple as the extra water seeping into this dry, unirrigated hillside from a drain exiting an adjacent housing development, has transformed pure fine fescue into a dense tangle of weedy grasses.

THATCH MANAGEMENT

Thatch management may be necessary, especially if you have difficulty with the concept of cutting way back on inputs of water and fertilizer to fairways and roughs. Recovery from aggressive cultivation will be slow due to the inherent slow growth rate of this species, so less disruptive cultivation techniques, such as vertical mowing, slicing, spiking, and small-diameter coring may be more effective to address a thatch problem than large-diameter coring operations. Limiting fertilizer inputs to 1-1.5 lb. N/1,000 sq. ft. per year will help prevent excessive thatch accumulation.

DISEASES, INSECTS, STRESS

Be prepared to diagnose and address a few somewhat unfamiliar diseases and insect problems. Keep in mind that symptoms for the same disease may vary between species of cool-season

grasses. Diseases common to fine fescues, such as red thread, summer patch, dollar spot, and leaf spot, can crop up quickly under low fertility. Symptoms of damage from chinch bugs would be unfamiliar to most superintendents.

Fine fescue's strength is its tolerance to drought, shade, and low fertility, but an often overlooked weakness is its sensitivity to heat and high humidity. Never mow the turf when it is under heat/drought stress. Fescue can still be very susceptible to Pythium blight during extended periods of hot, humid weather, despite limited supplemental irrigation. Some varieties of fine fescue have experienced injury when treated with chlorothalonil. Make it a habit to check for herbicide or fungicide discoloration or injury by treating a small area of turf before applying plant protectant to the entire playing surface.

TRAFFIC

Encourage the architect to design a pedestrian-friendly course, and limit motorized cart use. Where carts are an absolute necessity, construct a paved cart path and restrict carts to the path during periods of heat stress. In lieu of a paved path, use ropes/stakes and signs as needed to reduce excessive traffic across localized areas of turf. Those 50 carts that explore every inch of the course during a hot, windy Monday afternoon outing can cause considerable damage to crispy fescue fairways.

Be careful what you wish for. Golfers will notice that green grass plays and looks very different from brown grass, and they ultimately pay the bills. Are your members purists who will readily accept extra firm, off-color fairways and roughs for daily play, or do they simply long for an enjoyable afternoon in a lush, park-like setting? An extra 50 yards of bounce and roll is great, assuming, of course, that the ball rolls down the middle of the fairway. The same golfers who grouse about soft, wet turf and plugged balls will also complain about a slightly errant drive to the perimeter of a firm fairway that caroms beyond the primary rough or settles into a bunker that never seemed reachable when the turf was green and more "receptive."

Regardless of what they want or think they want, the golfers' expectations for intense golf course conditioning may soon take a back seat to the mandate for more environmentally friendly turf maintenance as regulations and restrictions

regarding the use of water, pesticides, and fertilizers become more stringent. It's a good time to keep a step ahead of regulations and develop a plan to establish low-input species on at least a few areas of the course to determine whether or not your soil type, climate, and clientele can accommodate these grasses.

GREEN ALTERNATIVE OR NICHE GRASS?

Heavy cart traffic, heavy soils, and several weeks or months of hot, humid weather each summer will severely limit the performance of pure fine fescue fairways on the vast majority of U.S. golf courses. A few exceptions exist in sandy sites with a less stressful maritime climate, but other cool-season grass species are generally more appropriate for fairways.

On the other hand, improved varieties of fine fescue can and should be utilized more for naturalized areas of the course and for primary

roughs subjected to relatively little cart traffic. The answer to the question of niche grass versus green alternative lies somewhere between the two extremes.

REFERENCES

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BOB VAVREK *discusses the facts, fallacies, and finer points of fine fescue management during Turf Advisory Service visits to Wisconsin, Michigan, and Minnesota.*

Motorized golf carts and fine fescue don't mix. The tire tracks from just one wayward cart could affect the appearance of the course for an entire season. Limiting irrigation to keep fescue fairways dry, firm, and brown will make the turf susceptible to cart damage.

