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Tall Fescue Varieties for New Jersey Sports Fields

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Tall fescue (*Festuca arundinacea*) is widely used for forage, roadside stabilization, control of soil erosion, home lawns, and sports fields. Interest and use of tall fescue as a forage and conservation grass increased in the United States with the development and release of 'Alta' and 'Kentucky 31' in 1940 and 1943, respectively. By the 1960s, Kentucky 31 was becoming more widely recognized as a useful turfgrass in the transition zone of the United States due to its good heat tolerance and adaptation to a wide range of soil (pH, fertility, and moisture) and light conditions. Use of Kentucky 31 and Alta as turfgrasses has declined in recent years due to the commercial release of many improved turf-type tall fescues that exhibit a lower (more decumbent) growth habit, darker green color, and formation of a more dense turf stand when compared to Kentucky 31 and Alta.

Tall fescue is well adapted for use on low maintenance, non-irrigated sports fields. Tall fescue has the capacity to develop a deep root system that provides tolerance or avoidance of drought stress. Additionally, this grass can also survive under reduced fertility, and tolerates insects better than many other cool-season turfgrasses. Although short rhizomes are observed on some plants, tall fescue is considered to have a bunch-type growth habit (tillers from a central crown). Emergence of tall fescue seed occurs within 5 to 7 days in warm moist soil. Compared to perennial ryegrass, the rate of tillering and establishment of tall fescue is slower.

Breeding for turf-type tall fescues was initiated in 1972. The first turf-type variety with a lower growth habit, finer leaves, and reduced vertical growth was 'Rebel,' followed closely by the release of 'Falcon' and 'Olympic.' Compared to Kentucky 31, these cultivars had considerably higher tiller density, darker green color, greater tolerance of low mowing heights, and better disease resistance.

Purchasing Seed

The purchase of certified seed from wholesale or retail outlets is strongly suggested. Certified seed is grown in fields inspected by a state-certifying agency for genetic purity, and also must meet standards established for germination and freedom from weeds and other crop seeds. Knowing the variety of seed in the container is important because it allows the buyer to select improved varieties that will produce higher quality turf under traffic with greater persistence and fewer inputs. Conversely, use of poorly adapted varieties can result in extensive turf failure, which increases the likelihood of renovating the turf. Seed that does not identify varieties or is described as variety-not-stated (VNS) presents a great risk to the buyer because the turf quality of the seed is unknown. The seed in the container could produce turf quality ranging from extremely poor to good.

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Use and Maintenance of Tall Fescue Turf

During the last 20 years, the use of improved tall fescue for turf has increased dramatically. Turf-type tall fescues have been used to improve the quality and durability of school grounds, sports fields, and parks in New Jersey as well as many other areas of the United States. Lower-growing varieties of tall fescue offer reduced mowing frequency as well as improved turfgrass quality. Lower irrigation and fertility requirements of tall fescue make it possible to maintain moderate to high quality sports fields turf while reducing costly inputs.

Tall fescue is adapted to moderately well-drained and fertile soil of slight acidity (optimum pH of 6.5 to 6.7). Tall fescue is an excellent choice for low to medium maintenance sports fields where irrigation is limited or not available. The drought tolerance of tall fescue is dependent on the turfgrass stand being capable of developing a deep extensive root system. Utilizing tall fescue on sports fields with shallow or poor quality soil conditions will severely limit root development and reduce any expected benefits of drought tolerance; nevertheless tall fescue is still a better choice than perennial ryegrass and Kentucky bluegrasses under these conditions. Thus, efforts to improve soil quality, particularly at the time of sports field construction, will enhance the drought tolerance of tall fescue as well as other turfgrasses.

The good wear tolerance of well-established mature tall fescue makes this grass an option for sports fields and other high traffic sites. When establishing tall fescue on sports fields in late summer, commencement of play should be withheld until the following spring to ensure the development of a wear tolerant turfgrass stand. Good turfgrass recovery from wear damage is largely a result of re-growth from meristems located on the crown at 1/3 of an inch below the soil surface. Tall fescue lacks abundant rhizomes, which are necessary for aggressive lateral spreading; thus, Kentucky bluegrass is commonly mixed with tall fescue to increase the ability of the turf to spread laterally. Such mixtures should consist of one or more Kentucky bluegrass varieties in combination with two or more traffic tolerant turf-type tall fescue varieties with the following standards (percentage by weight):

85-95% Tall Fescue (Traffic tolerant turf-types, see Table 1)

5-15% Kentucky Bluegrass

Seed mixtures that contain perennial ryegrass as well as tall fescue and Kentucky bluegrass are also used; however, these mixtures are more likely to produce less uniform turf cover. Also, perennial ryegrass has aggressive seedling vigor and may dominate in a turf mixture and, therefore, the turf will effectively perform as a perennial ryegrass turf and not a mixture. Lower amounts of perennial ryegrass (5 to 20%) should be used if a mixture of species is desired.

Tall fescue is not well suited for mixtures with other grasses when a uniform appearance of the turf is desired. The most uniform appearance occurs when tall fescue is seeded as the only turfgrass (monoculture) or in a mixture with Kentucky bluegrass. Tall fescue is commonly mixed with perennial ryegrass and sold for turf seed. The perennial ryegrass component of the seed mixture is included to provide a rapid establishment of darker green turf. Under a higher fertility program, tall fescue seed mixed with as little as 5% perennial ryegrass can result in a turf that is 90% or greater perennial ryegrass. Turfgrass breeders have continued to develop tall fescue varieties with darker green color and the need to include perennial ryegrass for color enhancement has decreased. A 100% tall fescue turf should be seeded at 4 to 8 pounds of seed per 1000 square feet (175 to 350 pounds per acre) of turf area. A tall fescue and Kentucky bluegrass mixture should be seeded at 4 to 6 pounds of seed per 1000 square feet (175 to 265 pounds per acre).

Tall fescue may be grown in some rather poor soil conditions and can be maintained at a higher mowing height and a low to moderate level of fertility. Without measures taken to improve the conditions, the overall appearance of turf grown on poor soil will probably not be of high quality. Mowing heights under very low maintenance or poor soil

conditions should be 3 inches or higher. A mowing height of 2 inches can be used when turf-type tall fescues are maintained with moderate levels of fertility and sufficient water. Tall fescue turfs will usually be prone to weed invasion at mowing heights less than 2 inches.

Annual nitrogen fertilization rates vary depending on the soil fertility, desired turf quality, and the necessity to encourage turfgrass recovery following sports field use. Annual nitrogen rates range from 1 to 4 pounds of nitrogen per 1000 square feet of turf area. Higher annual nitrogen rates may be appropriate for establishing turf or promoting turfgrass recovery on intensively trafficked turf sports fields where recovery from severe wear damage is necessary. Older turf where soil fertility has been improved will generally require lower rates of nitrogen fertilization. Applying the majority of nitrogen fertilizer in late summer and early fall will improve density and overall health of the turf better than spring application of fertilizer.

Irrigation of tall fescue sports fields is necessary under severe drought conditions to maintain green vigorous growth; however, a healthy tall fescue turf is capable of surviving drought for many weeks by going dormant. Tall fescue drought survival will be best if traffic, insects, or disease are not damaging the turf. Tall fescue turf grown on shallow or poor quality soils will have a limited root system and, therefore, less persistence under severe drought stress. Further information can be found on-line at *www.rce.rutgers.edu* or by contacting your county Extension office in the blue pages of your telephone book under county government.

Research conducted at Rutgers University has demonstrated varying levels of traffic tolerance for commercially available tall fescue varieties. Traffic, consisting of compaction and wear, was applied to the 2001 National Turfgrass Evaluation Program (NTEP) tall fescue test in 2002 and 2003. Varieties characterized as having "Good" tolerance to traffic showed good performance under traffic in both 2002 and 2003. The performance of "Moderately Good" and "Fair" varieties in response to traffic was less consistent compared with the better performing (Good) varieties. Varieties described as "Poor" displayed unacceptable performance when subjected to traffic in both 2002 and 2003 and should not be used for sports turf. Tall fescue varieties showing Good, Moderately Good, and Fair, traffic tolerance are listed in Table 1.

Table 1. Traffic tolerance of tall fescue varieties recommended for New Jersey sports fields. This listing does not take all tall fescues into consideration. Only those varieties in the 2001 NTEP tall fescue trial that exhibited fair to good performance under traffic are listed.

Good tolerance			
Elisa	Titan Ltd	Apache III†	Endeavor
Tar Heel	Olympic Gold†	Jaguar 3	
SR 8550†	Dominion	Masterpiece†	
Silverstar†	Tulsa II	Bingo†	
Moderate Good Tolerance			
Blackwatch†	Forte†	Tar Heel II†	Padre†
Finelawn Elite†	Falcon IV†	Falcon II	SR 8600
2nd Millennium†	Bravo	Coyote	
Millennium	Watchdog	Barlexas	
Fair Tolerance			
Scorpion	Tempest	Rendition†	Barlexas II
Tomahawk RT	Focus	Wyatt	

† These varieties produced high turfgrass quality (dark green color, fine leaf texture, and high density) in the absence of traffic when evaluated in 2002–2203.

Table 2. Tall fescue varieties not recommended for moderately to highly trafficked turf. This listing does not take all tall fescues into consideration. Only those varieties in the 2001 NTEP tall fescue trial that exhibited poor performance under traffic are listed.

Poor Tolerance			
Kentucky 31	Daytona	Plantation	Avenger†
Constitution	Davinci†	Justice†	Pure Gold
Kitty Hawk 2000	Tuxedo	Bonsai	

† These varieties showed good turfgrass quality (dark green color, fine leaf texture, and high density) in the absence of traffic when evaluated in 2002-2003.

Due to coarse leaf texture, low shoot density, and light green color, the following tall fescue varieties should be restricted to utility turfs: Alta, Fawn, Kenhy, and Kentucky 31.

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