UNDERSTANDING TURF MANAGEMENT

THE FESCUES

the 18th in a series by
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Tall fescues will tolerate the soil conditions and maintenance of a poor sports field, but a good sports field will not tolerate tall fescue.

A renewed interest in the fescues has occurred in recent years as a cool season turf species with the advent of the turf-type cultivars of tall fescue. The interest has been sparked by the ability of some members of the fescue family to continue to provide an acceptable appearance when under stress such as drought or heat.

The Fescue Family

The fescues originated in Europe, but today are common throughout the world.

While there are approximately 100 fescue species, only six are considered of any value for turf. The six are divided into two groups on the basis of leaf texture or width: the course fescues and the fine fescues.

The course fescues are tall fescue (*Festuca arundinaceae* Schreb.) and meadow fescue (*Festuca elatior* L.). The fine fescues are creeping red fescue (*Festuca rubra* L.), chewings fescue (*Festuca rubra* L. subsp. *commutata*), sheeps fescue (*Festuca ovina* L. subsp. *ovina*) and hard fescue (*Festuca ovina* L. subsp. *duriuscula*).

As the name suggests the coarse fescues are characterized by a relatively broad, wear resistant leaf and deep rooting. As a result they are relatively stress tolerant, especially to drought and heat. Stands of pure tall fescue, however, tend to become clumpy, particularly in thin stands, because it is a bunch grass which expands by tiller formation at the edge of a wide crown. Meadow fescue is a relatively short lived bunch grass which has some tolerance to poor drainage, but is seldom considered for sports field mixtures.

Under heavy wear, mixed stands of tall fescue with spreading rhizomatous species such as Kentucky bluegrass, tend to isolate the bunch grass into unsightly clumps. A pure tall fescue stand, overseeded with bluegrass for renovation purposes, will quickly become an unsightly rough turf.

While originally developed as a pasture species for the transition zone between cool season and warm season grasses, recent cultivar selection has generated turf-type cultivars of tall fescue which have a finer leaf that is visually more acceptable. The studies have also considered the insect resistance of tall fescue due to endophytic alkaloid production.

The fine fescues are generally represented by creeping red fescue, however, there are subtly differences between the various subspecies. Creeping red fescue has short, slender rhizomes and is thus capable of colonizing bare areas. In contrast chewings fescue does not have rhizomes. Sheeps fescue, also a bunch type grass, has the ability to survive under extreme drought conditions of sandy to gravelly soils. Hard fescue, likewise a bunch grass, is the coarsest of the fine fescues.

Fescue Advantages

The major advantage of the turf-type tall fescue cultivars is their tolerance to stress, whether it be from drought, heat, fertility or wear. During periods of heat and drought stress the leaves retain their colour and rigidity better than most other turf grasses. The coarse nature of the leaf imparts a relatively high degree of wear tolerance into tall fescue. It has therefore been suggested for sports fields where minimum maintenance is to be used.

The second advantage of turf-type tall fescues is the recent interest in endophyte alkaloid production which imparts a degree of insect resistance to the tall fescue (see Sports Turf Manager, Vol 8, Issue 2, 1995).

Due to the darker green colour of the leaf, tall fescue appears to tolerate low fertility and an acid pH better than other turf species. Nevertheless its growth performance is best with a soil pH of 5.5 to 6.5 and medium to high fertility. An advantage for non-sports field use, such as drainage channels, is its tolerance to wet conditions and ability to survive periods of submersion.

Tall fescue emerges rapidly which makes it a desirable species for overseeding areas where the turf has been lost due to excessive wear.

Meadow fescue has many of the same advantages of tall fescue, but in addition it has a brighter green leaf, a finer textured leaf and greater shade tolerance. It is seldom used in sports field mixtures in North America, but is more compatible than tall fescue in mixes with Kentucky bluegrass.

The main advantage of the fine fescues is the fine textured leaf. The principal species used for turf is creeping red fescue, so named from the extravaginal type of root development and the occurrence of thin, short rhizomes. It also has a fibrous and extremely dense root system.

Creeping red fescue has the greatest shade tolerance of the cool season turf species. Shoot density under shaded conditions, however, is less than in full sun. Nevertheless under full sun conditions a mixture of bluegrass and red fescue will be dominated by the bluegrass. It has good drought tolerance but does not tolerate poorly drained soils.

The primary advantage of Chewings fescue is its tolerance to acidic soils. Its other attributes are similar to red fescue.

The principal advantage of sheeps fescue is the high degree of drought tolerance. It is also a particularly long-lived perennial. Hard fescue also has similar properties but may exhibit greater poor drainage tolerance.

Fescue Disadvantages

With the exception of creeping red fescue the main disadvantage of the fescues is their bunch type growth habit. Unless a very dense stand is maintained the advantage associated with the wear quality of fescues is lost on sports fields. Furthermore when the stand becomes thin and is overseeded with bluegrass or ryegrass the overall appearance of the field deteriorates due to the surviving course clumps of tall fescue.

To maintain a desirable turf of tall fescue an intense overseeding program is required. Seed germination is sufficiency rapid to allow the overseeding programme to be successful even during periods of field use.

Tall fescue does not have the cold tolerance of the bluegrasses. This adds to the thinning of the stand and the tendency to form a clumpy, undesirable turf within a

few years of seeding.

Due to the very fine nature of the leaf and the tendency to lay over or lodge, the fine fescues are difficult to mow unless maintained at a relatively low mowing height of 4.0 cm.

Cultural Practices

Good performance of fescues is obtained with medium levels of nitrogen. In fact the red fescues may decline in quality with high levels of nitrogen. Phosphorus and potassium requirements are similar to other turf species.

With the exception of the red fescues cutting at less than 5.0 cm will encourage the clumpy growth habit of the fescues.

While tolerant to adverse soil conditions best performance is obtained where good soil conditions of porosity, drainage, neutral pH and fertility are maintained.

Seed mixtures of tall fescue and perennial ryegrass should be (by weight) 50% ryegrass : 50% fescue. With bluegrass the mixture should be 20% bluegrass : 80% fescue.

NEW MEMBERS

Brian Campbell, St. George's School, Vancouver
Jack Funk, Univ. of Toronto
John Wilson, York University
Hendrick Verkammen, York University

Sharpening Rotary Mower Blades

John Lindenfelser, John Deere Ltd
& Devon McGee, Encore Manufacturing

Rotary mowers cut grass as the blade's cutting tip, moving at a high velocity, impacts the grass blades. For the quality cut, the cutting edges of the mower blade must be sharp.

Commercial cutters should install new or resharpened blades at least once a day. This is required for a professional quality cut.

A blade's cutting edge varies in length but is usually several inches long. The first inch does most of the cutting. Assume you are moving with a walk-behind mower with a blade at 3250 rpm. At this speed, the blade rotates at 54.17 revolutions per second. Also assume that the mower is going forward at 2 mph or 3 feet per second. With two cutting edges on the blade, the 54 rps equates to 108 cutting swaths per second. At 3 fps, each swath removed a 5/16th - inch strip of grass; therefore the interior portion of the cutting edge contributes little to the cutting process. Since the first inch does most of the cutting, it is important to get a good edge on this area.

With some of the popular mulching blades, the extended cutting edge recuts the clipping during suspension. It is also felt that the increased ground speed of riding mowers makes it beneficial to increase the length of the cutting edge.

Once the mower blade has been removed for sharpening:

- Check the blade to assure that it is not bent and that it has the correct attitude in relation to the mower housing and the ground surface. (To check this, place the blade on a perfectly flat surface). The blade should be straight, with the cutting tips lower than the heel (centre portion) of the blade.
- Sharpen the blade by grinding the top surface only, maintaining the original cutting edge angle. Make sure all nicks are removed and that the cutting tips are smooth and sharp.
- Make sure the blade is balanced. Use a commercial balancer or place the blade on a pin clamped in a vase. If one end of the blade swings downward, material must be ground gradually from the heavy end until the suspended blade will remain in a fixed position.
- Properly reposition the blade on the mower. Tighten the retaining nut securely.

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EDITORIAL

Who Pay$?

Traditionally agricultural research and extension has largely been funded by the Federal and Provincial governments. Turf research and extension has always been a beneficiary of that funding.

The policy was the result of a desire on the part of the Federal and Provincial authorities to promote a vibrant food producing capacity. In part the policy resulted from the initial development of the country. In part the policy developed from food shortages in Canada and in England during the two wars. In part the policy developed from the social aspect of maintaining low cost food. To a large degree, and with global markets, none of these reasons apply today.

Furthermore, none of these reasons justify turf being a part of the policy. Nevertheless turf contributes to the general well being of the nation, through recreational activities, aesthetics of the environment, even pollution abatement. Strong arguments can be made for sport which involves turf as a means of crime prevention by providing an alternative activity to burn off excess energy.

While industry has contributed significant funds for projects of current interest to industry in product development, the infrastructure - the expensive part of the system - has largely been established through tax payers money. A notable exception is funding of the Frost Building at the Guelph Turfgrass Institute.

In the past few years, however, budget restraints have drastically curtailed the funding available for turf research and extension. To continue the research and extension programs in turf alternative funding must be found; funding for projects which are not the focus of a particular turf supply company, but which are necessary for the turf industry as a whole.

One avenue which should be explored to generate the necessary funding is "user pay". Should a charge not be levied for all extension calls which truly reflects the cost of that service - a cost equivalent to what a private consultant would bill? Should a research project at the GTI not be charged the full cost of maintaining the facility - a percentage of the station capital cost, the operational cost etc.? Should new services be generated by GTI to service the needs of the industry on a cost recovery basis?