

Low Maintenance Turfgrass For Landscapes and Commercial Agriculture

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While turfgrasses provide many economic and environmental benefits in New Hampshire, their maintenance costs can be relatively high. UNH Cooperative Extension has been planting and evaluating several turfgrass varieties in recreational, landscape and farm settings that perform well with lower inputs of water, fertilizer, mowing and pesticides.

Fine Leaf Fescues

Turf grasses with the lowest maintenance requirements are the fine leaf fescues. They are recognized for being survivors in adverse conditions, including our infertile, acidic soils. They also have excellent tolerance to shade, drought, most pests, and cold temperatures.

The three most commonly used fine leaf fescues are the chewings, hard, and creeping types (not to be confused with the coarser, tall fescue type). Their requirements and maintenance needs are listed in Table 1. (See last page.)

New Developments

Turf breeders have recently incorporated low growth and high endophyte traits into some varieties. This has further reduced maintenance requirements.

Low Growth: Mowing frequencies can be reduced by 50 percent with dwarf varieties. While their root systems are comparable to conventional varieties, slower and shorter leaf elongation and upright growth habit help reduce apple leaf litter, scab inoculum, and vole populations in orchards.

Endophytes: Endophytes are a type of fungi (*Acremonium genus*) in certain grasses that pro-

duce chemicals that either kill or repel sucking insects: chinch bug, thrip, billbug, sod webworm, aphid, or others that feed on grass stems. They are found only in certain perennial ryegrasses, tall fescues, chewings fescues, and hard fescues.

The fungus has a symbiotic relationship with the host plant. The host provides food and shelter and the fungus provides insect protection. The fungus is passed along through the seed and doesn't harm the grass.

Fresh seed should always be used. To sustain the life of the fungus, store in a cool and dry place at 40–50° F.

Seed Considerations

Varieties

Many of the commercially available varieties evaluated under field conditions in New Hampshire are listed below. Each variety has a low growth habit and contains at least 50% endophytes. New and promising varieties are continually entering the market. Contact the nearest UNH Cooperative Extension office for an update.

| | |
|---------------------|----------------------------|
| Hard Fescue: | SR 3000, Reliant II, Valda |
| Chewings Fescue: | SR 5000, Longfellow |
| Perennial ryegrass: | SR 4200, Regal |

Seed Mixtures and Rates

Faster establishment rates and less weed competition will result if the fine leaf fescues are combined in mixtures (Table 2 on next page). The fine leaf fescue will eventually predominate the stand. Perennial ryegrasses are particularly beneficial on sloping land where erosion is a problem or when rapid establishment is critical.

Table 2.

Suggested Seed Mixtures With Fine Leaf Fescues

| Mixture | Species | Seed Rate Lbs./1,000 | Seed Rate Sq. Ft. |
|---------|--|-------------------------|----------------------|
| 1 | 70% Hard Fescue 30% Perennial ryegrass | 3-4 | 130-170 |
| 2 | 40% Hard Fescue 10% Chewings Fescue 30% Canada bluegrass 20% Perennial ryegrass | 3-4 | 130-170 |
| 3 | 60% Hard Fescue 20% Perennial ryegrass 20% Dutch White Clover | 3-4 | 130-170 |

Establishment Procedure

With few exceptions, soil preparation and seeding procedures are basically the same in both landscape and commercial agriculture settings. One difference regarding agriculture seedings is the benefit to the major crop by allowing one year for soil preparation. A pre-plant application of Roundup is often applied for control of perennial weeds. This is followed by a seeding of Sudangrass. This helps reduce parasitic nematodes while supplying valuable organic matter.

Soil Preparation

Step 1. Obtain a University of New Hampshire soil test kit to determine lime and fertilizer requirements for the major crop to be grown. Fine leaf fescues will tolerate a low soil pH and prefer values between 5.0 and 6.5. The pH for an apple crop is adjusted to 6.5, brambles at 6.0, Christmas trees 5.0-6.0, and blueberries from 4.5-5.0.

Step 2. When soil tests indicate a need, agricultural limestone (calcium carbonate or dolomitic lime) should be thoroughly rototilled or disced into the upper six inches. On soils that have not received lime for five or more years, a general recommended rate is one ton dolomitic lime/acre (50 lbs./1,000 square feet). An exception is blueberry soil where lime application is unlikely.

Step 3. Rake and smooth the soil removing rocks, roots, and large clods.

Step 4. Incorporate a starter-type fertilizer such as 10-20-10 (10 pounds/1,000 square feet) or its equivalent into the upper four inches of

ground. A high phosphorus fertilizer will benefit seed germination as well as root development of newly planted fruits or ornamental plants.

Step 5. Complete the final grade by raking or lightly harrowing the surface.

Step 6. Water and roll the prepared area to settle the soil and provide a moist base for the seeding.

Seeding

Lightly rake the seed into the upper one-quarter inch of soil and roll. A brillion seeder does an excellent job and eliminates the need for raking and rolling. Apply a weed-free mulch when seeding on a hillside prone to erosion.

The best time to seed is mid-August through early September. This is especially important for the hard fescues which are slow to germinate and establish.

Post Seeding Considerations

Under many low maintenance situations, the only care these grasses will often receive after the initial seeding are periodic mowings. Here are other practices to consider:

Weed Control

Control of invading weeds will likely be the biggest concern the first year after seeding. Once a dense sod has developed, the threat of weed competition is greatly reduced.

The addition of a low-growing Canadian bluegrass and perennial ryegrass in the seed mix provides earlier establishment and suppression of weeds until the fine leaf fescue is established. A higher seed rate should be used when the seeded area is under pressure from an adjacent hay field.

Dandelions and other broadleaf weeds will germinate throughout the growing season. It may be feasible to remove dandelions in small areas with a knife or spade-type tool, but a post-emergent herbicide is recommended for control in larger areas. Annual broadleaved weeds are effectively controlled by mowing when 10 inches tall.

Crabgrass and other grassy weeds will often be a problem for seedings made from spring through mid-summer. In this situation, it's best to apply a pre-emergent herbicide prior to germination.

Read the label to determine if the herbicide is registered for both the crop and turf to be treated.

Mowing

Mowing can begin when the grasses reach their desired height. If unmowed, most varieties only grow 5-10 inches high before the blades flop over.

Fertilization

While the fine leaf fescue can tolerate low fertility levels, they will respond and maintain better density if fertilized once per year. An application both spring and fall is desired on landscaped sites.

When seeding in the fall, topdress the following spring with 45 lbs. actual nitrogen/acre (1 lb./1,000 square feet). Yellowing of turf was observed when this application has been omitted. The turf should be established for two years after seeding on a farm site before you consider omitting spring nitrogen applications.

A 10-10-10 fertilizer is suggested on landscaped sites while 15-0-0 (Calcium nitrate) provides an additional calcium benefit on a fruit site.

Watering

Fine leaf fescues won't need watering once they are established. They are capable of surviving dry conditions even in sandy soils.

Field Observations

All grasses will limit growth of trees and shrubs and will limit fruit size during dry periods if allowed to grow to their base. A weed free strip should be maintained 30 to 36 inches wide around trees and bushes. Hard fescues are clump grasses that won't spread into crop rows because they don't develop rhizomes. Seedlings are best made in strips during August with row crops planted the following spring.

Tree Fruits

Proper management of the orchard floor can have a significant impact on mowing time, vole control, fruit size, soil erosion, attractiveness for pick-your-own sales, and insect and disease control.

Older orchards typically contain pasture-type grasses, such as orchard grass, timothy, or brome grass that require frequent mowing. More recently, orchardists have seeded lawn-type grasses that consist primarily of creeping red fescue with perennial ryegrass and Kentucky bluegrass.

Seed mixes for hillside orchards should contain a high level of low-growing, endophytic perennial

ryegrass that establish quickly and provide protection from erosion. The perennial ryegrass will die out within five years when the fescue is fully established.

Hard fescues are more suitable on sites where integrated pest management (IPM) is practiced. Reduced sprays during the mud season will decrease traffic and injury to turf.

The number of herbicides registered for orchard use is limited. If possible, herbicides should be applied prior to setting out tree fruits. It has been observed that hard fescues resist injury when sprayed with Poast at the lower rate.

Once established, hard fescues are competitive with weeds. Dutch white clover may enter newly seeded areas but shouldn't represent a long range problem as its longevity is from two to four years. Clover may also harbor predacious mites, which reduces spray applications.

Creeping red fescues tend to lay over while most hard fescues have an upright growth habit. For this reason, hard fescues can be mowed close, resulting in a less attractive habitat for voles.

An experiment at Gould Hill Orchard, Contoocook, showed a marked reduction of leaf litter at the base of trees planted in fine leaf fescues. Fewer leaves at the base of trees will reduce a source of inoculum for apple scab (Table 3).

Endophytic fescues and perennial ryegrasses are unattractive to sucking insects and may reduce the population of vectors transmitting virus to peach and apple trees.

Table 3.

Leaf Litter Results

| Grass Variety | Weight of Leaf Litter |
|----------------------------------|-----------------------|
| Jamestown Chewing Fescue | 2 lbs. 5 oz. |
| Reliant Hard Fescue | 13 oz. |
| Control (orchard grass, timothy) | 3 lbs. 1 oz. |

Note: Two strips were raked by each tree. Each strip was 3 ft. long.

Small Fruits

Most blueberry, raspberry and grape growers allow customers to pick their own fruit. It's important for growers to provide a durable turf that's attractive and comfortable to walk on.

Field parking is very common at pick-your-

own operations. A wear-resistant, low-growing, tall fescue, such as Rebel Jr., is best suited for parking areas. It is seeded at a rate of seven lbs. per 1,000 sq. ft.

Highbush blueberries are shallow rooted and have little tolerance for weed competition. Raspberries are difficult to hand weed. Hard fescues will remain where seeded and won't spread beneath bushes. They compete very well with weeds between crop rows.

Research is in progress to learn if endophytic fine leaf fescues reduce the incidence of mosaic virus in raspberries.

Greenhouse

Usually the soil surrounding a commercial greenhouse is primarily sand and gravel. Deep-rooted, broadleaved weeds (dandelion and dock) and annual weeds (crabgrass) thrive in a dry, hot environment. Hard fescues are drought tolerant and compete with deep-rooted weeds. A thick, healthy turf is still the best control for problem weeds.

Many herbicides are registered for turf and can be applied legally around the greenhouse. Greenhouse vents should be closed during spraying to avoid drift and injury to ornamental plants.

Tall grass and broadleaved weeds harbor many insects and disease organisms. Reduced mowing

decreases insect migration through greenhouse vents.

A significant reduction in the population of thrips, aphids, leafhoppers and plant bugs was observed following a seeding of endophytic hard fescues and perennial ryegrasses on a demonstration site at Pleasant View Gardens, Pittsfield. Many sucking insects are vectors of virus diseases in greenhouse crops.

Other Uses

Hard fescue blends also have been seeded experimentally on roadsides, cemeteries, parks, home landscape and Christmas tree plantations.

Dutch white clover is included in seed mixes of hard fescues for Christmas tree plantations. It's generally seeded at four pounds per acre with hard fescues. The following are considerations for its use:

- slippery when wet
- attracts bees
- attracts deer
- harbors beneficial mites
- susceptible to powdery mildew
- fixes nitrogen
- harbors tarnish plant bug & encourages nematodes

For further information, contact either John Roberts at (603) 862-3202 or David Seavey at (603) 225-5505.

Table 1.

Characteristics and Environmental Guide for Fine Leaf Fescue Turfgrasses

| Fine Fescue Species | Growth Habit | Establish Rate | Nitrogen Requirement | Tolerance Level | | | | | Seeding Rate | Soil Adaption | Preferred Soil pH |
|---------------------|---------------------|----------------|----------------------|-----------------|-----------|----------|-----------|-----------|--------------|-------------------------------|-------------------|
| | | | | Traffic | Drought | Salinity | Shade | Cold | | | |
| Hard Fescue | Bunch type | Slow to Medium | Low | Good | Excellent | Low | Very good | Very good | 130-170 | well drained infertile acidic | 5.0-6.5 |
| Chewings Fescue | Bunch type | Medium | Low | Fair | Good | Low | Very good | Very good | 130-170 | well drained infertile acidic | 5.0-6.5 |
| Creeping Fescue | Spreads by rhizomes | Medium | Low | Poor | Good | Low | Very good | Very good | 130-170 | well drained infertile acidic | 5.0-6.5 |