



Fescue Eradication



Tall fescue (*Festuca arundinacea*) is an exotic, cool-season grass that begins growing early in the year when temperatures are too cold for most other plants to grow. This fact, combined with its ability to form a dense, low-growing mat, which covers the seed bed and prevents other seeds from germinating, allows fescue to quickly establish dominance. In addition, tall fescue is fairly drought and flood tolerant, grows well on acidic and low fertility soils, and compares somewhat favorably with other cool-season grasses in forage quality. These characteristics, combined with its ability to control erosion and withstand heavy traffic, made KY 31 tall fescue attractive to livestock producers, erosion control specialists, and landscapers. In Indiana, over 1 million acres of pastures, hay fields, field borders, utility right-of-ways, and roadsides have been seeded to tall fescue. Although primarily grown in the southern third of Indiana, tall fescue occurs to some degree in almost every county.

Unfortunately, these same characteristics have also made tall fescue one of the greatest enemies of maintaining quality wildlife habitat. It is an aggressive, sod-forming grass that creates a thick, matted condition which severely limits the movement and foraging ability of ground-nesting and ground-feeding wildlife. Tall fescue is also allelopathic. This means it produces compounds that adversely affect the growth or germination of surrounding plants, thus suppressing the establishment of other plants, which are more beneficial to wildlife. As a result, a solid stand (monoculture) of fescue often results. This reduces the ability of wildlife to select a diverse and nutritious diet, and its matting nature leaves little in the way for wildlife concealment against avian predators. The absence of structural and plant diversity within a fescue stand limits its potential to provide quality nesting and foraging habitat for most wildlife species. Fescue also tends to flatten under the weight of snow, reducing its ability to provide protective winter cover, and once established in an area, tall fescue can be tough to completely eradicate.

Another quality of tall fescue that has proven detrimental, is the fact that most tall fescue stands have become infected with the endophytic fungus, *Acermonium coenophialium*, that lives within the plant's intercellular spaces. The fungus produces alkaloids that are toxic to many plants and animals and causes fescue toxicosis in cattle, horses, and sheep. The symptoms of this infection include nervousness, rough hair coat, elevated body temperature, reduced weight gain, decreased milk production, and lowered birth rates. It has been estimated that the livestock industry loses \$500 million a year from fescue toxicosis. One farmer said "It is our main feed and our main problem". Wildlife, including deer, rabbits, quail, and some small mammals and songbirds are also known to be adversely affected by the fungus and exhibit many of the same symptoms. Past studies have shown that rabbits and quail, feeding solely on infected fescue and its seed, exhibit high mortality rates within two weeks.

Eradication of tall fescue, where ever possible, greatly improves the opportunity to provide diverse grasslands capable of supporting more robust and healthier wildlife populations. The two methods most frequently used to eradicate tall fescue are the use of herbicides and/or conventional tillage. In choosing a method, consideration should be given to the availability of equipment, potential for soil erosion, the type of vegetation to be re-seeded, and cost.

Use of Herbicides

The use of herbicides for fescue eradication is usually the best choice because it can be adapted to any site. It is strongly recommended for use on highly erosive soils and slopes where soil disturbance (plowing or disking) may cause or exacerbate erosion problems. Another advantage is that only one pass with spraying equipment is needed in most situations. If the landowner does not have the equipment or the time to do the spraying, most farm supply stores provide custom spraying services. Another option is to hire the services of a nearby farmer.

To make the most efficient use of the herbicides and obtain the best results, spraying should be conducted when the fescue is actively growing (March - April or September - October) and approximately 6 to 12 inches in height. Prior to herbicide treatment, the fescue should be mowed, grazed, or burned and allowed to re-grow to a height of 6-12 inches. This will reduce the amount of non-target residue (dead, leafy material) and ensure the maximum exposure of new growth to herbicide contact. If prescribed burning is going to be used, make sure a comprehensive burn plan is developed, and if necessary, seek professional assistance in conducting the burn.

Sites Scheduled for Cool-Season Grass and Legume Establishment

For sites scheduled to be re-seeded to a cool-season grass/legume mixture, two applications of glyphosate (*RoundUp*®, *RoundUp Ultra*® or equivalent) are recommended (Fall and Spring). Glyphosate is a broad spectrum, systemic herbicide that does not provide residual (post-application) effects; therefore, it will not harm cool-season grasses, legumes, or forbs that are seeded after the fescue has been eliminated. A fall application mixture of 1 quart/acre of glyphosate, 6-7 ounces of a nonionic surfactant, plus ammonium sulfate (17 pounds per 100 gallons of water) will control about 95 % of the existing tall fescue stand. However, this treatment alone will not provide any residual control of late germinating weeds or grasses, and some fescue re-infestation will likely result from the current year's seed production unless fescue seed heads were mowed prior to maturity (late May - early June). A similar, follow-up treatment in the Spring will probably be necessary. Allow any remaining fescue grass or seed to germinate and grow approximately 6 inches in height and then spray. Wait 7 days after application before preparing the seedbed or sowing seed. **Note:** Although a single Spring application of a similar tank mixture, using glyphosate at the rate of 2 quarts/acre can be used to eliminate fescue, this method only provides adequate control. Fescue re-growth and late-germinating fescue seed will quickly invade newly seeded sites and likely result in the need for additional fescue control.

Sites Scheduled for Warm-Season Grass and Forb Establishment

For sites scheduled to be re-seeded to a warm-season grass/forb mixture, the method described above for eliminating fescue for cool-season grass establishment (using glyphosate), may also be used. Another option is to use imidazoline (*Plateau*® or equivalent), alone or in combination with glyphosate. Imidazoline is a broad spectrum herbicide that provides residual control for up to 8 weeks, depending on the application rate. Most warm season grasses and many forbs (wildflowers) are tolerant to this herbicide; however, cool season grasses and most broad-leafed annuals are not tolerant. The residual effects of imidazoline suppress the growth of most broadleaves and cool-season grasses, thus allowing warm season grasses and forbs to become established more quickly.

The preferred method is to apply imidazoline at the rate of 4 ounces, along with 2 quarts of glyphosate, plus 1 quart of methylated soybean oil (MSO) per acre in the Spring when the fescue is actively growing. This mixture will control 95 % of the tall fescue and will control late-germinating grasses and weeds for up to 6 weeks. The low rate of imidazoline will also allow a greater diversity of tolerant forbs to become established.

Imidazoline can also be used alone at the rate of 8-12 ounces, plus 1 quart MSO per acre in the Spring to effectively kill fescue. At this rate, residual control of weeds and grasses may extend up to 8 weeks, however, most forbs will be intolerant. The high rate of imidazoline should not be used if a large component of the new seeding consists of switchgrass, eastern gamagrass, sideoats grama, or wildflowers. Severe injury, poor stand development, or stunted growth of these plants will occur.

Methods for Controlling Tall Fescue with Herbicides¹

Chemicals/Methods	Timing	Site Can Be Seeded To:		Comments
		Cool Season Grasses	Warm Season Grasses	
Glyphosate (1 quart/acre) Nonionic Surfactant (6-7 ounces) Ammonium Sulfate (17 lbs./100 gallons of spray) 10 gallons of water/acre	Fall and Spring	Yes	Yes	Both Fall and Spring application needed. Will control 95 % of fescue. Apply with flat fan nozzles at 30-40 p.s.i. when fescue is 6-12 inches and actively growing. Wait at least 7 days after Spring treatment to prepare seedbed or plant.
Glyphosate (2 quarts/acre) Nonionic Surfactant (6-7 ounces) Ammonium Sulfate (17 lbs./100 gallons of spray) 10 gallons of water/acre	Spring	Yes	Yes	Fescue control will be adequate (50-90 %). Re-infestation from seed will occur. Apply with flat fan nozzles at 30-40 p.s.i. when fescue is 6 inches and actively growing.
Glyphosate (2 quarts/acre) Imidazoline ³ (4 ounces/acre) Methylated Seed Oil (2 pints/acre)	Spring or Fall	No	Yes	Up to 6 weeks residual control. Do not plant cool-season grasses during residual time period. Some wildflowers not tolerant.
Imidazoline (8-12 ounces/acre) Methylated Seed Oil (2 pints/acre)	Spring or Fall	No	Yes	Up to 8 weeks residual control. Do not plant cool-season grasses during residual time period. Most wildflowers will not be tolerant.

¹ The use of trade names does not constitute an endorsement of specific products. Contact local farm supply stores for availability of equivalent herbicides. Always consult and follow herbicide label directions and precautions.

² Glyphosate is the active ingredient in *RoundUp*®, *RoundUp Ultra*® or equivalent brand.

³ Imidazoline is the active ingredient in *Plateau*® or equivalent brand.

Conventional Tillage

Although tall fescue is difficult to eradicate without using herbicides, conventional tillage equipment can be used to suppress tall fescue. It is best adapted for use on non-erosive sites. The most effective method is to plow the sod in the fall and allow the fescue rhizomes to remain exposed to freezing conditions throughout the winter months. As soon as the soil can be worked in the spring, disk down the plowed sod and allow it to green-up with whatever germinates. Disk the field again to kill off the vegetation, being careful to only disturb the first 2-3 inches of the soil. Deep disking will only bring more fescue seed up into the germination zone. Allow the field to green-up one more time, then shallow disk to kill the competition.

At this point, the site can be left fallow to encourage annual weed growth, planted to a grain food plot, or seeded to a cool-season grass/legume mixture. Another option is to plant a dense stand of wheat, oats, or millet to further suppress the germination of any remaining fescue seed. If the site is going to be seeded to warm season grasses, repeat the green-up/shallow disking method at least one more time to further reduce weed competition.

If the conventional tillage method is employed on sloping sites, care should be taken to keep erosion to a minimum. Perform all tillage practices on the contour and alternate tilled areas with unplowed buffer strips. Once the tilled areas have been adequately vegetated, the remaining buffer strips can be converted using the same process.

Tall fescue is an extremely competitive, exotic, cool-season grass that is very difficult to completely eradicate. It is not always practical or necessary to eliminate all fescue. Rather, the goal should be to keep most of it suppressed so that other more beneficial and diverse vegetation types are available to support the needs of wildlife. Once a site has been renovated, frequent mowing, deep tillage, or fall burning should be avoided. These practices will tend to accelerate fescue re-infestation.

Related *Habitat Management Fact Sheets*:

Warm Season Grass Establishment
Cool Season Grass Establishment
Natural Revegetation
Woodland Edge Enhancement
Prescribed Burning

Grain Food Plots
Legume Food Plots
Legume Interseeding
Wildflowers

Prepared by the Indiana Department of Natural Resources, Division of Fish and Wildlife. For up-to-date information concerning the Indiana Division of Fish and Wildlife, or for information on the location of your District Wildlife Biologist, visit our website at www.wildlife.IN.gov

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