



VEGETATION MANAGEMENT GUIDELINE

Fescue (*Festuca pratensis* Huds. and *Festuca arundinacea*)

SPECIES CHARACTER

DESCRIPTION

This tall, coarse grass has short creeping rootstocks and grows in heavy clumps with erect stems 2-5 feet (0.6-1.5 meters) tall, it often forms dense solid stands. Leaves are 4-5 inches (10.1-12.7 cm) long, smooth on the undersurface and usually rough above. The erect panicles are usually 2-10 inches (5-25 cm) long and often nodding at the top. The panicles for both species are somewhat narrow and contracted to slightly spreading. Flowers occur in flat, oval spikelets that are 0.3-0.5 inches (8-12 mm) long. Usually, 6-12 individual flowers occur in each spikelet. Grasses, in general, are fairly difficult to identify, and fescue should be accurately identified before attempting any control measures. If identification of the species is in doubt, the plant's identity should be confirmed by a knowledgeable individual and/or by consulting appropriate field guides or reference books.

DISTRIBUTION

Fescue has been spread widely by cultivation throughout most of the United States and southern Canada. It now occurs throughout Illinois, but is particularly common in southern Illinois especially in pasture land, roadsides and waterways. These species are commonly planted in highway rights of ways or lawns.

HABITAT

This grass occurs in a variety of disturbed habitats including pastures, abandoned fields, agricultural set-aside fields, roadsides, grazed woods, and along railroad tracks. It can tolerate a wide range of moisture conditions and is common along levees, on pond dams, waterways and stream banks where it is often planted. Where it occurs in natural communities, it has often been spread by horses and cattle through manure and bedding materials.

LIFE HISTORY

This hardy perennial was introduced from Europe and is commonly sown for pasture and hay. It can withstand trampling and heavy grazing by livestock. It does well on poor acid soils and often is found where there is little competition from other species. Fescue grows best in open sunlight and spreads primarily by seed to form dense solid stands with deep root crowns. The heavy clumps have thick mats of roots that make it almost impossible to pull the plant out the ground. Fescue emerges early in the spring and often forms new growth in the fall after the seed matures in July and August. In southern Illinois,



the leaves usually stay green all winter. This grass is slow to become established, but once the heavy clumps are formed, it is difficult to eradicate.

Fescue is often infected with a fungal endophyte, *Neotyphodium coenophialum*, which interacts with fescue in a mutually beneficial way. Compared to uninfected tall fescue, infected tall fescue has increased drought tolerance, disease resistance, seed number, seed germination rate, tiller number, and biomass. The advantages of infection allow infected tall fescue to easily displace native plants and decrease plant biodiversity in natural communities. In addition, the endophyte of fescue inhibits many soil organisms, including pathogenic soil fungi and beneficial mycorrhizal fungi (mycorrhizae are associations between fungi and plant roots that occur in about four-fifths of all land plants; they are critical in supplying certain nutrients to plants). A loss of plant diversity is expected where tall fescue is common and has a high infection rate. An estimated 75% of the tall fescue in the United States is infected with the fungal endophyte.

The endophyte also produces toxins that make its host plant unpalatable to insects and grazing mammals. The endophyte produces alkaloids that are toxic to mammals and at least 20 insect species from 10 families and 5 orders.

EFFECTS UPON NATURAL AREAS

Fescue invades open natural communities, such as prairies and glades. In those communities, it can change species composition and crowd out native species, especially when it is infected with the endophyte. This alien species has the potential to become a significant problem because of its adaptability to poor sites, its ability to readily displace native plants, and its difficulty of eradication.

CONTROL RECOMMENDATIONS

RECOMMENDED PRACTICES IN NATURAL COMMUNITIES OF HIGH QUALITY

Initial effort in areas of heavy infestation

Dense stands should be burned in late spring, preferably between April 1 and April 20. It may be necessary to burn 2 or 3 years in succession to get old fescue stands under control. If repeated late spring burning does not control fescue adequately, it should be sprayed with a 1.0% active ingredient solution of glyphosate (Roundup, Roundup Pro, Rodeo, Touchdown Hi-tech) in early spring or late autumn when fescue is green but most native species are still dormant. A follow up prescribed burn the spring following the herbicide application should damage the remaining fescue and reduce competition for native plants. The burn should take place between April 1 and April 30, when the remaining fescue is actively growing. Timing of the burn will vary depending on environmental conditions. Conducting burns late in the spring can have adverse impacts on nesting grassland birds limiting the usefulness of the late burns in large sites where grassland bird populations are significant. Also, prescribed burning of green vegetation will produce heavier smoke. Special care must be implemented to reduce smoke hazards. Before commencing any prescribed burns, open burning permits must be obtained from the Illinois Environmental Protection Agency and often the appropriate local agencies too. Burns should be administered by persons trained or experienced in

conducting prescribed burns, and proper safety precautions should be followed.

Herbicide application should be done with a hand-held sprayer or wick/wiper applicator. Extreme care should be used while spraying to avoid contacting nontarget plants with the spray, because Roundup Ultra is a nonselective herbicide. **Do not spray so heavily that herbicide drips off the target species.** Roundup Ultra should be applied while backing away from the treated area to avoid walking through the wet herbicide. By law, herbicides may only be applied as per label directions and by licensed herbicide applicators or operators when working on public properties.

Effort in areas of light infestation

Late spring prescribed burning preferably between April 01 and April 20, should help eliminate young plants. Repeated burning for 2-4 years may be needed to achieve good control. Spot applications of 1.0% active ingredient solution of glyphosate herbicides applied with a hand-held sprayer or wick applicator in early spring or late fall may help if prescribed burning is insufficient. **Do not spray so heavily that herbicide drips off of the target species.** A few isolated clumps may be dug up by hand however the root crown of the plant may be as much as 2 inches deep.

Maintenance control

Surrounding seed sources must be eliminated where possible to prevent seed from continually moving into the natural area. Livestock should be kept out of the area, because plants are spread in manure. Seedlings and young plants that invade should either be eliminated by hand digging or spot applications of 2.0% Roundup Ultra, according to label instructions the first year.

RECOMMENDED PRACTICES ON BUFFER AND SEVERELY DISTURBED SITES

Initial effort in areas of heavy infestation

There are several methods for controlling fescue in areas of heavy infestations using one of the following herbicides: Roundup Ultra, Imazapic marketed under trade name Plateau or a Roundup Round Ultra and Plateau mix. The selection of one of these methods is based on time of year, condition of the site, site preparation, accessibility and species to be established on the site. These are all important factors to consider when determining control methods. Always refer to the manufacturer's label for specific timing, application rates, and species that are tolerant to, or are controlled by, a specific herbicide. Timing is important for both fall and spring herbicide applications. Mowing fescue prior to a fall herbicide treatment will remove dead foliage and encourage regrowth. For both fall and spring applications, allow for at least 10 inches of regrowth, as both Roundup Ultra and Plateau herbicide need foliage present for herbicide uptake and satisfactory control. **Do not spray so heavily that herbicide drips off of the target species.** By law, herbicides may only be applied as per label directions and by licensed herbicide applicators or operators when working on public properties.

Roundup Ultra Herbicide

Roundup Ultra can be used if the site is to be converted to cool season or warm season grasses. If desirable warm season grasses or forbs exist in the stand, Roundup

Ultra herbicide should be applied after a frost has caused the desirable vegetation to become dormant. If few or no desirable plants exist in the stand, treatment should occur during the second week of October or during vigorous growth when fescue leaves are at least 10 inches tall.

Fall Application

Apply 1 quart Roundup Ultra (41.0% active ingredient), 6 to 7 ounces of nonionic surfactant, ammonium sulfate at 17 pounds per 100 gallons of spray, and 10 gallons of water per acre following label directions. Apply with flat fan nozzles at 30 to 40 p.s.i., in the fall when fescue is at least 6 to 12 inches tall and actively growing. A follow-up application of Roundup Ultra in the spring after a fall application is usually needed to eliminate fescue seedlings, missed areas and individual plants that were not completely killed by the fall application.

Spring Application

Apply 3 to 5 quarts Roundup Ultra (41.0% active ingredient), 6 to 7 ounces of nonionic surfactant, ammonium sulfate at 17 pounds per 100 gallons of water, and 10 gallons of water per acre following label directions. Apply with flat fan nozzles at 30 to 40 p.s.i., in spring before the plants have reached the boot to early seedhead stage. Wait 7 days before preparing a seedbed for planting.

Roundup Ultra and Plateau Herbicide Mix

A Roundup Ultra and Plateau herbicide mix should be used when a manager is considering converting an area of fescue to warm season grasses and forbs. **A combination of both a fall and spring application of a Roundup Ultra and Plateau herbicide mix appears to provide the most effective control of fescue.** Caution should be used when applying Plateau herbicide, as Plateau herbicide will control or eliminate desirable vegetation. Always refer to the manufacturer's label for specific timing, rates and species that tolerate, or are controlled by, Plateau herbicide. If the species is not listed on the label as being tolerant to Plateau herbicide, assume that Plateau herbicide will control or eliminate that specific species. Do not exceed 12 oz. of Plateau per acre per year.

Fall Application

Apply 8 to 12 ounces of Plateau (23.6% active ingredient), 24 to 32 ounces of Roundup Ultra (41.0% active ingredient), and 2 pints of Methylated Seed Oil per acre following label directions. Mowing prior to fall herbicide application will remove debris and will allow for greater foliar interception of the spray. Allow for adequate regrowth (10"+) before spraying. Fescue must be actively growing for optimum control. Removal of the residue the spring following the fall herbicide application with prescribed burning, will aid in control of tall fescue and newly germinating seedlings. Use higher herbicide rates for older, mature fescue stands.

Spring Application

Apply 4 to 12 ounces of Plateau (23.6% active ingredient), 24 to 64 ounces of Roundup Ultra (41.0% active ingredient), and 2 pints of Methylated Seed Oil per acre

following label directions. Apply after fescue is actively growing. Applications made at time of seedhead elongation may result in reduced efficacy. Plateau provides control of emerged weeds and also pre-emergent control of weeds that will germinate and compete with native warm-season grass seedlings. Plateau may be applied prior to planting or after native warm-season grass seedlings emerge. Always refer to the manufacturer's label for specific timing, rates and species controlled.

Plateau Herbicide

Plateau Herbicide should be used alone when you are attempting to eliminate fescue in an established warm season grass planting or preparing a seed bed for certain warm season grasses and forbs. Caution should be used when applying Plateau herbicide to established stands of warm season grasses and forbs. Always refer to the manufacturer's label for specific rates and species of grasses and forbs that tolerate, or are controlled by, Plateau herbicide. Do not exceed 12 oz. of Plateau per acre per year.

Fall Application

Apply 8 ounces of Plateau (23.6% active ingredient) and 2 pints of Methylated Seed Oil per acre following label directions. Mowing prior to fall herbicide application will remove debris and will allow for greater foliar interception of the spray. Allow for adequate regrowth (10"+) before spraying. Burning in the spring, following fall herbicide application, will aid in control of tall fescue and newly germinating seedlings. Use higher herbicide rates for older, mature fescue stands. Fescue must be actively growing for optimum control. When using 8 oz. of Plateau herbicide per acre in the fall, applying an additional 4 oz. of Plateau herbicide per acre in the spring, is recommended for annual weed and seedling fescue control.

Spring Application

Apply 12 ounces of Plateau (23.6% active ingredient) and 2 pints of Methylated Seed Oil per acre following label directions. Fescue can be controlled by using Plateau herbicide at this rate in established stands of prairie grasses or to prepare a seed bed for prairie grass plantings. The addition of nitrogen fertilizer to the above mix will aid in control. Fescue must be actively growing for optimum control. If fescue has reached the boot stage or has reached summer dormancy, control may be poor.

Maintenance control

Surrounding seed sources must be eliminated where possible to prevent seed from continually moving into the natural area. Livestock should be kept out of the area, because fescue seed can be spread in manure. Late spring prescribed burning helps eliminate young plants and is a preferred treatment. A few isolated clumps may be dug up by hand. Spot applications of 1.0% Active ingredient solution of Roundup Ultra in early spring or late fall are effective. Mowing of surrounding seed sources (once or twice in May-June) will reduce or prevent seed set.

FAILED OR INEFFECTIVE PRACTICES

Pulling by hand is almost impossible because of tough root systems. Digging up clumps

is slow and sometimes undesirable in a high-quality natural area.
Mowing does not reduce existing populations and may encourage spreading by root stocks.
Fire is usually ineffective when fescue is dormant.
Most herbicides are ineffective if applied while fescue is dormant or after mowing.
Tillage usually is not an effective way to control any species in a natural area, but may be used in severely disturbed buffer areas.
Grazing is ineffective since it usually eliminates other species first and encourages the spread of fescue.
Manipulating water levels usually is not practical on natural areas where fescue occurs.
No biological controls are known that are feasible in natural areas.

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REFERENCES

- Fernald, M.L. 1950. Gray's manual of botany, eighth edition. American Book Co., New York. 1632 pp.
- Gleason, H.A. 1952. The new Britton and Brown illustrated flora of the northeastern United States and adjacent Canada. Vol. 1. The New York Botanical Garden, New York. 590 pp.
- Hodges, J. 1998. How to kill tall fescue, the recipe for success. Quail Unlimited Magazine. January - February 1998. Pp. 48 - 51.
- Matthews, J. 2000. Fescue: the lean, mean, green machine. Missouri Prairie Journal 21(2) 4-7.
- Mohlenbrock, R.H. and J.W. Voigt. 1959. A flora of southern Illinois. Southern Illinois University Press, Carbondale. 390 pp.
- Schwegman, J.E. 1988. Exotic Invaders. Outdoor Highlights, vol. 16, no. 6, pp 6-11.
- Sole, S., and Keyser, P. 1998. Handling the fescue problem. Quail Unlimited Magazine. March - April 1999.
- Smith, T.E. Editor, 1997. Tall Fescue Vegetation Management Guidelines, pp. 147 - 151, Missouri Vegetation Management Manual.
- Toney, T.E., S.E. Clubine and L.M. Mechlin. 1992. Fescue control on Native Grassland Using Herbicide. The Proceedings of the 13th North American Prairie Conference.

PERSONAL COMMUNICATIONS

- Abrell, Brian. 1988. Division of Nature Preserves, Indiana Department of Natural Resources, Indianapolis, Indiana.
- Bender, J. 1988. Kentucky Nature Preserves Commission, Frankfort, Kentucky.
- Crews, W. 1988. Crab Orchard Wildlife Refuge, United States Fish and Wildlife Service, Marion, Illinois.
- Kern, Steve. 1999. Division of Wildlife Resources, Illinois Department of Natural

- Resources, Springfield, Illinois.
- Kurz, Don. 1988. Natural History Section, Missouri Department of Conservation, Jefferson City, Missouri.
- McFall, Don. 1988. Illinois Nature Preserves Commission, Springfield, Illinois.
- Nyboer, Randy. 1988. Division of Natural Heritage, Illinois Department of Natural Resources, Springfield, Illinois.
- Olsen, Steve. 1988. Division of Nature Preserves, Indiana Department of Natural Resources, Tell City, Indiana.
- Packard, Steve. 1989. The Nature Conservancy, Chicago, Illinois.
- Schwegman, John. 1988. Formerly with Division of Natural Heritage, Illinois Department of Natural Resources, Springfield, Illinois.
- Simpson, Scott. 1999. Division of Natural Heritage, Illinois Department of Natural Resources, Springfield, Illinois.
- Stritch, Larry. 1988. Formerly with Shawnee National Forest, United States Forest Service, Harrisburg, Illinois.

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