



VEGETATION MANAGEMENT GUIDELINE

Kentucky Bluegrass (*Poa pratensis* L.)

SPECIES CHARACTER

DESCRIPTION

Kentucky bluegrass is a perennial grass that may form a dense mat of short creeping rhizomes. Leaves are usually smooth, 0.08-0.4 inches (2-9 mm) wide, up to 15.8 inches (40 cm) long, flat to folded, with a boat-shaped tip. Sheaths surrounding the flowering stalk are rounded or flattened with ligules 0.03-0.2 inches (1-5 mm) long.

Stems are numerous in a tuft and grow 12-36 inches (30-91 cm) high. The erect panicles are up to 36 inches (1 m) tall and pyramidal at top with distinct whorls of branches in the inflorescence. Flowers occur in oval spikelets from 0.1-0.2 inches (3-6 mm long) with three to six individual flowers in each spikelet.

Bluegrasses (the genus *Poa*) are distinguished by their flat leaf blades, 2-6 flowered panicles, 1-3 nerved glumes (sterile scales at the base of a spikelet) and a tuft of cobwebby hairs at the base of the 5-nerved lemmas (small scales at the base of a floret). Grasses, in general, are fairly difficult to identify, and Kentucky bluegrass 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 manuals or keys.

DISTRIBUTION

Kentucky bluegrass occurs throughout Canada and south to Mexico. It is widespread in the United States, occurring in all 50 states, but is less common in the South. There is disagreement whether Kentucky bluegrass is native only in Eurasia or if it is also native in Canada and the northernmost United States. Most authorities agree that it is introduced in the southern United States. The plant was likely introduced to the east coast sometime after 1600, and was quickly spread westward by settlers. Today, Kentucky bluegrass is considered naturalized across North America. It is now common throughout Illinois and is found in every county. The plant is widely valued as a pasture and turf grass with at least 38 cultivars available on the market.

HABITAT

Kentucky bluegrass is widely planted for lawns and is used for forage in some regions. It occurs in a variety of disturbed habitats including pastures, fields, roadsides, grazed or open woods, semi-shaded areas, and meadows. It prefers moist conditions and can withstand flooding. It thrives in calcareous soils, but not in acid or sandy soils.



LIFE HISTORY

Kentucky bluegrass is a rhizomatous, perennial, cool-season grass. It is one of the first grasses to resume growth in late winter or early spring. It grows rapidly and begins flowering in May. In Kentucky and Missouri, seeds are mature by mid-June. By midsummer, plants become nearly dormant. With cool temperatures and precipitation, growth resumes in the fall and continues until daytime temperatures approach freezing. It grows best in full sunlight but will tolerate light shading if moisture and nutrients are favorable.

Plants produce both tillers (aboveground shoots that develop in the axillary buds of leaves) and rhizomes (horizontal underground stems, rooting at the nodes and having scales). Rhizomes enable bluegrass to form sods and can extend the lateral growth of an individual plant as much as two square meters in two years. Kentucky bluegrass is shallow rooted with most roots and rhizomes found within three inches (7.5 cm) of the soil surface. It is intolerant of drought. Under drought or dry soil conditions, rhizomes produced are shorter than normal. The production of short rhizomes appears to increase under other adverse conditions such as fire injury, high temperatures, or close mowing or grazing. Rhizome production and growth occur throughout most of the year, except late winter and early spring. New rhizome growth begins when flower stalks begin to lengthen.

Each tiller or rhizome produces a single flowering stalk. Flowering occurs from mid-April to July. During late spring and early summer, carbohydrates are lost from the roots to aboveground plant parts. Kentucky bluegrass is considered by some to be an apomictic species which means that it does not reproduce sexually. Other sources report that it does reproduce sexually and can produce large amounts of seed, with yields of 100 seeds per panicle and 4,000 panicles per square meter of turf. Kentucky bluegrass can hybridize with several native species within the genus *Poa*, including arctic bluegrass (*P. arctica*), alpine bluegrass (*P. alpina*), Wheeler's bluegrass (*P. nervosa*), fowl bluegrass (*P. palustris*), nodding bluegrass (*P. reflexa*), and Sandberg bluegrass (*P. secunda*).

In naturalized settings, seeds germinate in the fall and require light for germination. Germinative capacity varies from 75 to 94 percent. Kentucky bluegrass seed buried to depths of 42 inches (105 cm) germinated in a buried seed experiment, and over half the shallow seeds and three-fourths of the deep seeds germinated within the first four years after burial. A laboratory experiment indicated that freshly harvested seed required a cold treatment at 41-59° F (5-15° C) for 10-14 days for germination. Six months after harvest, however, this cool treatment was not required for germination.

Kentucky bluegrass can withstand, and apparently thrive, on successive defoliations, such as repeated mowing. It can also withstand trampling and heavy grazing by livestock. A population can be long-lived; some North American Kentucky bluegrass fields are at least 60 years old.

EFFECTS UPON NATURAL AREAS

Kentucky bluegrass is a serious invader of moist, open, natural communities, such as prairies and savannas. It is a common component in many tallgrass or mixed prairies although it often is not highly visible. Natural communities most likely to be threatened by Kentucky bluegrass are prairies, savannas, barrens, glades, and open woodlands.

CONTROL RECOMMENDATIONS

RECOMMENDED PRACTICES IN NATURAL COMMUNITIES OF HIGH QUALITY

Initial effort in areas of heavy infestation

Annual prescribed burning in the spring after Kentucky bluegrass has greened up but while native warm-season grasses are still dormant, can effectively control Kentucky bluegrass in tallgrass prairies dominated by warm-season plants. Late spring fires, after plants have been growing for about a month or more, are the most damaging to Kentucky bluegrass. Sampling at the end of the first growing season after late spring burning indicated that Kentucky bluegrass basal cover and tiller density are typically much lower in burned areas than in nearby unburned areas. At least three years of annual burning may be necessary to adequately control bluegrass. In fields dominated by cool-season grasses in Wisconsin, Kentucky bluegrass density was reduced by 80 percent after six years of annual burning in May; annual burning in March or October did not affect Kentucky bluegrass density. Kentucky bluegrass is more susceptible to fire damage on ridge sites than in depressions, especially in dry years. Spring burns can also increase the productivity of native warm-season grasses allowing them to better compete against Kentucky bluegrass. Annual spring burning, however, is not advisable on prairies with a large component of native cool-season grasses and sedges, because burning at this time will harm the native cool-season species as well as the bluegrass. Late spring burns can also impact early-nesting grassland birds such as prairie horned larks.

Effort in areas of light infestation

Same as stated above for areas of heavy infestation in high-quality natural communities.

Maintenance control

Kentucky bluegrass plants should be eliminated from bordering areas, where possible, to prevent it from continually creeping into the natural area. A regular spring burning regime should maintain adequate control within the natural area. If this is not feasible, seedlings and young plants that invade should be eliminated by hand digging.

RECOMMENDED PRACTICES ON BUFFER AND SEVERELY DISTURBED SITES

Initial effort in areas of heavy infestation

Annual prescribed burning in the spring is recommended for at least three years. If the site lacks enough dried vegetation ("fuel") to carry a fire well, then herbicides may be needed.

Sethoxydim (Tradename Poast and Poast Plus), Fenoxaprop (Acclaim Extra), Fluazifop (Fusilade DX), and Clethodim (Envoy) are grass specific herbicides that can be effective in controlling Kentucky bluegrass when applied according to label instructions during the spring when most native warm-season grasses are still dormant. Proper use of these herbicides may result in less damage to non-target vegetation than other herbicides because they kill only grasses (and not forbs) and reportedly do not affect sedges or iris's. For optimal control, plants should be sprayed until thoroughly wet, but **do not spray to the point that herbicide drips off the target**

plants. The herbicide should be applied while backing away from the area to avoid walking through wet herbicide. Personal protective wear is recommended when applying herbicide. By law, herbicides may only be applied as per label instructions and by licensed herbicide applicators or operators when working on public properties.

For Poast and Poast Plus a 1½ % solution (1.9 ounces of herbicide/gallon of solution) with 0.5 % (0.6 ounces/gallon) spray adjuvant or 1.0 % (1.3 ounces/gallon) crop oil is recommended. Acclaim Extra should be mixed at the rate of 0.3 fluid ounces of herbicide/gallon of solution. Do not apply more than 120 ounces of herbicide per acre per growing season. Fusilade should be mixed at the rate of 0.75 ounces of herbicide/gallon of solution and should always include either 1.5 fluid ounces of crop or vegetable oil or 0.5 fluid ounces of nonionic surfactant/gallon of solution. A 1.0 % solution (1.3 ounces of herbicide/gallon of solution) is recommended for Envoy and application rates should not exceed 68 ounces of herbicide per acre per year. Acclaim Extra, Envoy, and Fusilade DX are rainfast in one hour.

For Poast mix 1.3 ounces of herbicide and 1.3 ounces of oil concentrate with enough water to make 1 gallon of solution. Poast is rainfast within an hour after application. Fusilade DX must always be used with crop/vegetable oil concentrate or nonionic surfactant. For spot treatments, mix 0.75 ounces of Fusilade DX with 0.5-1.0 ounces of crop/vegetable oil concentrate **or** 0.5 ounces nonionic surfactant and enough water to make 1 gallon. Fusilade is rainfast in one hour. For Envoy, mix 0.65-1.3 ounces of herbicide with 0.33 ounces nonionic surfactant and enough water to make one gallon. Envoy is rainfast within one hour. **Do not spray so heavily that herbicide drips off the target species.** When using a hand-held or backpack sprayer, herbicides 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.

Alternately, non-selective herbicides such as glyphosate (tradename Accord, Glyphomax, Roundup, Rodeo, Touchdown), can be used for control, if applied properly. The site should be burned in spring as described above, and then Kentucky bluegrass should be sprayed with 1-2% herbicide solutions mixed according to label directions the following autumn after any native plants present are dormant. It may be necessary to burn and spray two or three years in succession.

Although Kentucky bluegrass can withstand repeated mowing or grazing, these methods can be effective controls if timed properly and if sufficient native warm-season grasses are present to provide competition. Intensive early spring grazing can decrease Kentucky bluegrass and increase big bluestem. Grazing should not be continued throughout the growing season, however, because continuous, long-duration grazing can greatly increase bluegrass and decrease big bluestem. June or November mowing can minimize cover of Kentucky bluegrass and maximize cover of Indian grass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*) and little bluestem (*Schizachyrium scoparium*)

Tillage may be useful in severely disturbed buffer areas that lack a native plant component. Repeated tillage is necessary in dense sods of Kentucky bluegrass.

Effort in areas of light infestation

Late spring prescribed burning helps eliminate young plants and is a preferred treatment.

A few isolated clumps may be dug up by hand. Spot application of 2% Roundup in early spring or late fall is effective.

Maintenance control

Same maintenance control practices recommended as for high quality natural communities.

FAILED OR INEFFECTIVE PRACTICES

- Mid-summer mowing is harmful to Kentucky bluegrass, but it is more harmful to native warm-season grasses.
- Unless burned a second time after a late spring burn, Kentucky bluegrass density and cover often return to preburn levels within one to three years.
- When Kentucky bluegrass is dormant (late fall, winter), prescribed burning or herbicides are ineffective.
- Digging clumps is slow and can create undesirable disturbance in high-quality natural areas.
- Most herbicides are ineffective if applied immediately after mowing.
- Kentucky bluegrass is susceptible to a number of pests including diseases, insects, pathogens and fungi. However, because of the extensive use of Kentucky bluegrass in lawns and pastures, use of these measures as biological controls in natural areas probably is not feasible.

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PERSONAL COMMUNICATIONS

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