

Warm-Season Native Areas for Kentucky Golf Courses

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Figure 1. Chariot Run Golf Club, Laconia, IN. Native areas frame the golf holes and incorporate significant amounts of broomsedge and little bluestem. (Photo courtesy of David Beanblossom)

The average golf course has a median footprint of about 150 acres, and natural or native vegetation covers approximately 17% of these acres. Golf courses often provide large green spaces in urban areas. Not all of these areas are highly maintained turfgrass; some are cultivated as native areas (Figure 1). Native areas may be defined as those areas on the golf course receiving very infrequent mowing and composed of one or more of the following: native warm-season grasses (NWSG), fine fescues, wildflowers, or previously maintained turfgrass allowed to reach maturity. Although golf courses may use species in these areas that are not native to Kentucky, this publication will focus on the utilization of native warm-season grasses. Colloquially, these parts of the golf course are referred to as native areas, native roughs, low-mow areas, or no-mow areas. For the purposes of this publication, they are all considered synonymous.

Native areas provide an opportunity to improve aesthetics, increase wildlife and pollinator habitat, reduce inputs, and add plant diversity. When establishing and maintaining native areas, it is critical to have appropriate expectations. The establishment of minimal-mow native areas does not necessarily equate to minimal maintenance. These areas often succumb to significant weed competition, but with some effort, they have potential to add environmental and aesthetic benefits to Kentucky golf courses.

Establishment

Kentucky was historically covered with approximately three million acres of native grasslands. The introduction of naturalized areas on the golf course is a transition back to a historical landscape. When establishing new native areas on existing golf courses, consider several factors beforehand, such as species selection, location of planting, and the seeding process.

Species Selection

Species selection is arguably the most important decision a turfgrass manager must make when establishing new grass stands. Kentucky is in the transition zone, with USDA hardiness zones between 6b and 7b. This means we have hot summers and cold winters. Because of this, both warm- and cool-season grasses struggle to grow optimally at different times of the year. Native warm-season grasses and some fine fescues have provided desirable native areas on golf courses, but not all species are suitable for Kentucky. Additionally, not all species that are suitable for Kentucky are desirable in the golf course landscape.

When selecting suitable species, do so with sustainability and playability in mind. Species that are adapted to Kentucky's weather will persist the longest. Species that are attractive and not overly dense or tall should be considered for areas that may come into play for the golfer. Strategic decisions on where to establish native areas are discussed later in this publication.



Figure 2. Native warm-season grasses provide nesting cover for birds while also allowing open space for small chicks to forage and golfers to search for golf balls. (Photo by Elizabeth Johnson, University of Kentucky)

While several NWSG grow well in Kentucky, the predominantly used species available for golf course roughs are broomsedge bluestem (*Andropogon virginicus*), little bluestem (*Schizachyrium scoparium*), prairie dropseed (*Sporobolus heterolepis*), purple top tridens (*Tridens flavus*), and side oats grama (*Bouteloua curtipendula*).

Commonly, golf courses will establish native roughs by simply discontinuing regular mowing of tall fescue roughs. Another method is to plant fine fescue species and mow them infrequently. While both methods can be successful, utilizing NWSG has attractive benefits that the other options do not.

One such benefit is increased wildlife habitat. Tall fescue is a dense-growing grass that provides poor wildlife habitat and difficult conditions for golfers to advance the ball from. By contrast, native warm-season grasses are bunch-type grasses that provide adequate nesting cover for ground-nesting birds (Figure 2). The growth habit of these grasses also provides bare ground where chicks can forage for insects and seeds. Dual-purpose acreage presents a promising opportunity for slowing the decline of grassland birds. Not mowing native areas during the golfing season, which coincides with peak growth for native grass species, will provide safety for ground-nesting birds like quail as well as allow grasses to head out, creating additional aesthetic value for the golf course (Figure 3).

The wispy fine fescues famous on the links of the British Isles are typical of golf courses there. But, unlike the coastal links dotting the landscape near the home of golf, Kentucky's nearly 50 inches of annual rainfall and hot summers provide less than ideal growing conditions for fine fescues. In the United States, fine fescues are best adapted for the climates of northeast and north-central states. An additional pitfall of fine fescues is their tendency to lodge. For these reasons the NWSG listed previously in this section should be considered in mixtures when establishing new native areas on the golf course.



Figure 3. A native rough strategically placed to add beauty without interfering with the playability of the course. (Photo courtesy of Matthew Wharton)

Other warm-season grasses, such as eastern gamagrass, switchgrass, big bluestem, and Indiangrass, are available, but their height and biomass are not desirable for golf course roughs. Broomsedge bluestem, little bluestem, prairie dropseed, purple top tridens, and side oats grama are the most promising candidates for an aesthetically pleasing and potentially playable golf course native area. This is due to their low growing heights and bunchy growth.

Location

When making decisions on the placement of native areas, keep the golfer and maintenance requirements in mind. Appropriate signage and a well-informed professional golf staff can help explain the lack of mowing and promote sustainability efforts on the course to the golfing public.

When adding native areas to the golf course, superintendents should communicate to the golfers the benefits these areas provide. Decisions to add or expand native areas on the golf course should have the golfer's enjoyment in mind as well as pace of play. When too many balls find their way into native areas, the golfer's tolerance and pace of play will be drastically reduced. Working with golf-course architects and other consultants can help in making these decisions.

Another helpful tool is the use of traffic history obtained from global positioning systems (GPS). Foot and cart traffic tracked with GPS devices allows superintendents to quickly locate zones that do not come into play during a normal round of golf. Native areas should not be established on parts of the golf course that receive regular traffic. Properly placed native areas may also decrease "nuisance" wildlife encounters, drawing wildlife to these areas rather than regularly trafficked areas.

Seeding

Native warm-season grasses should be seeded in the spring when soil temperatures are consistently above 55 degrees Fahrenheit, usually during May in Kentucky. Seeding too early can cause failed germination, while seeding too late in the year may result in less mature grasses that are more prone to winter damage.

Tillage can be used to prepare the seedbed, but it is not necessary. A fall and spring application, or two spring applications four weeks apart, of glyphosate should be used to kill the existing vegetation before using a seed drill to plant these grasses. Mowing and burning to remove thick grasses can also help in preparing a site for seeding of native warm-season grasses. Once existing vegetation has been killed, warm-season grasses may be seeded using a no-till seed drill. Native warm-season grasses listed in this publication are fluffy seeds that will require a special drill that has agitation and picker wheels to help get the seed down the tubes. In lieu of specialized equipment, talk to your seed supplier about the possibility of debearding your seed. This process of removing the hairlike appendages from the seed allows for conventional seed drills to be used. For golf courses, most native warm-season grasses should be seeded with between three and six pounds of pure live seed per acre. A lower seeding rate is acceptable, since these plantings are not meant for hay production or for grazing, and this low seeding rate will be more beneficial for wildlife. Broomsedge can be found growing in low-maintenance areas along roads and farm fields. These plants can be transplanted to native areas on the golf course (Figure 4).



Figure 4. Broomsedge collected from an established grass stand, on left, is transplanted to form a new native area on the golf course, on right. (Photos courtesy of Conner Wilson)

Maintenance

Once you have selected, prepped, and planted the species of choice, the site maintenance must commence. It is important to emphasize again that native areas are not maintenance-free areas. Maintenance should include a weed-control program, mowing, and when possible, burning.

Weed Control

Weed control will be necessary to some extent every season to maintain attractive native areas that will last for years to come. Weed control is especially important in the first two to three years as the stand matures. Weed control starts with site preparation and properly killing existing vegetation with the use of a nonselective herbicide such as glyphosate. Research has also shown that using imazapic (Plateau) as a preemergence herbicide can reduce competition from crabgrass during establishment without unacceptable damage to some warm-season grasses. Research in Kentucky tested 12 different establishment methods for converting tall fescue fields to native warm-season grasses. This work found that a spring (March) burning followed by an imazapic application provided the best tall fescue kill and native warm-season grass establishment.

Once the grass has been established, herbicides such as 2,4-D; 2,4-D + aminopyralid; imazapic; quinclorac; sethoxydim; topamezone; and others may be used to provide postemergence broadleaf and grassy weed control. Canada thistles are often a problem in native areas and may best be controlled with aminopyralid or clopyralid. Survey the weeds present and consider the best herbicide choices for the weeds you have as well as the timing. Often spraying in the fall after the first frost will give the best control of many broadleaf weeds. Fall applications after winter annuals have emerged and while perennial broadleaves are still growing allow you to kill both with one spray application.

When spraying native areas that contain tall-growing grasses that may lodge, consider the direction you travel through the areas, because tire tracks will be present for a long time afterward. If you can make passes perpendicular to the tee boxes, they will often be less visible to the golfer as they stand on the tee looking toward the fairway. Boomless nozzles may be preferred, because the booms of common golf course sprayers will drag the grasses, resulting in poor spray coverage. Drone sprayer technology also has the potential to remove the problem of visible tracks through native areas. When there are isolated areas of weeds, physical removal may be the best option to prevent tire tracks left by a sprayer.

Mowing and Burning

When animals are not grazing native warm-season grasses, an annual or twice-annual mowing is warranted. The timing and height of mowing can affect plant density and promote either cool- or warm-season grasses. Mowing in the late fall or early winter once the warm-season grass seed is mature and leaving eight inches of stubble will promote warm-season grasses over cool-season tall fescue. Additionally, making applications of imazapic can reduce the tall fescue in a stand.

Burning stands of warm-season grass is a beneficial maintenance practice. Burning should be done at least once every two to three years. Burning in combination with the herbicide imazapic is beneficial for reducing the presence of tall fescue. Burning used in conjunction with glyphosate is beneficial for thinning native warm-season grasses that have become rank, allowing for more forbs to grow in support of wildlife. It is important to follow local burn ordinances and inform the local fire department as well as neighboring property owners when you plan to burn. The Kentucky Division of Forestry or the Kentucky Prescribed Fire Council can help with understanding regulations and techniques for burning. If burning is not possible or practical, flail mowers are available that can mow and remove debris and clean up native areas.

Some naturalized areas are difficult to maintain with traditional mowing equipment and may be suitable for grazing by sheep or goats. Occasionally golf courses will contract with farmers to temporarily graze these areas with livestock and electric fences.

In parts of New Zealand, sheep are still a popular way to “mow” the grass. In a 2015 article in *Golf Course* magazine, Kansas State University turfgrass science professor Jack Fry relayed a perspective shared by a New Zealand superintendent: “... sheep are walking mowers that supply turf nutrition, sweaters for the golfers and, after they’ve served their purpose, food for the table. How many of your mowers do that?” While not common today, there is still a time and place when livestock can serve as helpful additions to the golf-course maintenance team.

Irrigation and Fertilizers

Native warm-season grasses do not require supplemental irrigation due to their deep and very fibrous root systems and water-use efficiency. The use of irrigation in native areas will only increase the amount of weeds present. Native warm-season grasses perform well under low-fertility situations, therefore applying fertilizer is not recommended. In fact, low levels of potassium have been shown to reduce competition from legumes. As potassium soil levels decrease, grasses are able to make use of the nutrient more easily than legumes. This provides an environment that allows grasses to outcompete legumes.

Conclusion

Native warm-season grasses provide an opportunity to improve native areas on golf courses in Kentucky. While they are not maintenance free and there is an establishment and maintenance cost, these persistent perennial grasses can provide improved wildlife habitat and increase natural beauty on the course.

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