

Using Native Plants in the Golf Course Landscape

By JOHN WESTON

Golf Course Superintendent

Forest Hills Country Club

St. Louis, Missouri

If a weed is defined as a plant out of place, then a native plant should be defined as one in its place. Historically, native plants often have been ignored in favor of exotic species in landscape situations, but this philosophy is gradually changing. Public gardens using native species are being built throughout the country, books are being written on the subject, and a number of landscape architects are emphasizing the use of native plants for many landscapes. There is no doubt that native vegetation will play an important role in our environmental policy of the 21st century. The following is a case history of native plant establishment on a golf course in the Missouri area, but it could be adapted to fit any region.

Missouri represents a crossroads of vegetation for America. From the dry-land less vegetation of the Northwest, to the Gulf Coast vegetation of the Southeast, to the Ozark Mountain region of the South, to the tallgrass prairie of the North, each part of the state contributes to a remarkably diverse plant community. With the flowering trees in spring, native flowers in summer, fall foliage in autumn, and the dormant hues of grasses in winter, it is possible to have a 12-month splash of texture, contrast and color.

At Forest Hills Country Club, in St. Louis, we are in the last year of a 3-year landscape program honoring our native vegetation. Each hole is named after and features a species native to Missouri. The species were selected to fit habitat considerations and provide seasonal interest.

Four criteria must be met when setting out on such a program. The first, and most important, is education. With half of our timber cleared, and less than one percent of our prairie left, many people are not familiar with plants that are actually native. The second criterion is communication. It is difficult to sell such a project to people unless you can convince them of its importance. The third criterion is implementation, which requires decisions on the proper locations and methods of establishment. The final step is management with patience. It takes 10 to 15 years for most trees to make an impact in the landscape, and two or three years for grasses and forbs (wild flowers) to make a show.

Getting Educated

I began working in my family's nursery business at the age of 12, have a graduate degree from the College of Agriculture at the University of Missouri, and have been working in the golf maintenance business for 12 years. Yet,

even with my education and experience, I had a pitiful knowledge of native plants. And little wonder. Most landscaping work is centered around making an area look like someplace else. My education involved the use of introduced plant material, and it seems that most of our golf courses have that wall-to-wall "maintained" look.

Discovering what vegetation is native to a region is a time-consuming, yet rewarding task. My brother, who is still active in the nursery business, helped me find local nurseries that carry native woody materials. The grass and forb species were considerably more difficult to locate. Fortunately, the Missouri Botanical Garden had been re-establishing prairie since 1980 at their Shaw Arboretum, just southwest of St. Louis. The staff at the arboretum has been an endless source of information, providing me with tours, plant materials and slides. Mervin Wallace, who operates the state's only wild flower nursery, has sold us several thousand grass and forb plants. Rather than selling a generic regional mix, Mr. Wallace collects all of his seed in Missouri, so I know we are getting the real thing. Steve Clubine, Chief Grasslands Biologist with the Department of Conservation, helped with slides and a bibliography that covered prairie restoration and maintenance. Many phone calls and trips were made to obtain information from these individuals over the last couple of years. This education process was enjoyable and provided me with enormous pride in our region.

Communicating with the Membership

Your membership needs to be informed of the many benefits of a native vegetation program. If carried out properly, it produces a more diverse botanical ecosystem, creates an improved habitat for wildlife and increases natural beauty. An appeal should be made to the pocketbook, too. There is a lower establishment cost per acre for the introduction of native warm-season grasses compared to cool-season turf species, and a reduction in maintenance costs as well. This means fewer herbicide, fungicide, insecticide, irrigation and fertilizer applications. Equipment costs are lower, too.

It is not difficult to sell a tree-planting program to your membership. But to tell them that you want to establish native vegetation in some areas and leave these areas unmowed, however, invokes fears of snakes, hay fever, and weeds. That is where communication plays a role.

(Continued on Page 32)

Native Plants--

(Continued from Page 30)

After preliminary discussions with our grounds committee, I took my grounds chairman on a tour of the Shaw Arboretum. He was as impressed as I had been the first time I saw it. He brought along his camera and took some of the photographs which accompany this article. Another member of the grounds committee went with me when I took pictures of dormant foliage. Together, we sent to the entire membership a hole-by-hole description of our plans for native plantings, along with a description of each species. Because of these efforts, our plans were accepted.

Implementing the Plan

The first step in implementing a native vegetation plan is to do a detailed site analysis of your area. Among the factors that must be considered when selecting which native species to use are: whether the site is tree covered or open ground, the particular soil type you are working with, whether the site is normally wet or dry, whether the site is typically in sunlight or shade and the direction of its exposure.

After you have determined which plants are suitable for a particular area, find a source for the materials. Your local Department of Conservation is the ideal place to begin. The people there should be able to provide you with a list of distributors who supply seed, plants, and trees.

As mentioned earlier, Missouri is an intermingling of prairie and forest. At Forest Hills Country Club, we are using representatives of both groups for our plantings. The tree species selected include native dogwoods and redbuds in their understory environment, bald cypress and sycamores in lowlands, red cedar on dry slopes, and oaks, haw-thorns, ash and prairie crabapples in their natural habitat. We have also done a planting of *Rhododendron roseym*, which is the only azalea native to this part of the country.

Establishing prairie plants, including many forbs and grasses, has been a much more challenging and rewarding experience. Bear in mind that all prairie plants are warm-

season species.

At Forest Hills, we used both seeds and plants in establishing our forbs. Most native forbs are perennials which do not flower until at least their second year of growth. If you want a quick flower show, then purchase one- or two-year-old plants from someone who grows them, or start some from seed and put them out the second year. We have done both.

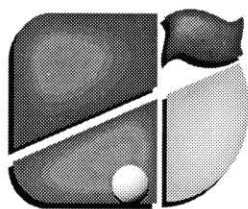
A small hoop house was purchased for approximately \$400, shelves were built and seed was planted around the middle of March. This process yielded approximately 15,000 plants that were ready to be transplanted by Memorial Day. We put some in pots for future use, but most of the material was transplanted in designated areas. The transplanting work involved the use of a generator, an electric drill with an auger, and lots of elbow grease.

For smaller landscape beds, we purchased one- and two-year-old plants from the Missouri Wildflowers Nursery, which collects all of its seed locally. They made an on-site inspection and helped us determine which species to use where. Over 2,000 asters, blazing stars, sunflowers, blackeyed susans, butterfly weeds, coneflowers and many other species were planted. They made a marvelous show this season. One species of blazing star was recommended for an unsightly rock gravel bank. Three hundred bulbs were put in the area with no soil amendment, and they looked great in August. All forbs were watered for two weeks after planting, then left unirrigated for the rest of the year. We are planning to put in several thousand more plants next year.

We pursued grass establishment in the same manner as forb establishment, using both seeds and plants. The growth of native grasses is similar to that of forbs in that there is not much to see until the second year. A one-acre Indian grass stand from seed was established in the following manner. The area was disked in August and planted with rye for a winter cover crop. In May, the rye was mowed, disked and gone over with a Gill Pulverizer to smooth and pack the seedbed. We then spread 15 pounds per acre of debarbed Indian grass seed with a Vicon spreader and dragged it in lightly with a chain link fence, being careful not to get the seed deeper than 1/4 of an inch. Timely rains helped produce good germination.

Bluestem, Indian grass, sideoats grama, prairie dropseed, sand lovegrass and silver beardgrass were used in mass and as specimens. Little bluestem belies its name because some of the foliage in summer was the color of Aqua Velva after-shave. In the fall it takes on hues of red and pink and stays that color through the winter. It seems that all of these grasses are at their showiest in dormancy, with shades of orange, red,

(Continued on Page 33)



**GILL
MILLER** INC.
Golf Course Architects

Design • Renovation • Master Planning • Practice Centers

122 North 2nd Street • River Falls, WI 54022 • 715-425-9511 • e-mail: info@gillmiller.com

visit our website www.gillmiller.com

Member: American Society of Golf Course Architects

Native Plants--

(Continued from Page 32)

pink, yellow, tan and brown giving a glorious display.

Prairie dropseed resembles weeping lovegrass in nature with its arching leaf canopy, and is sold widely as an ornamental specimen plant. It gives off a spectacular gold color in dormancy when planted in mass. Sand lovegrass has foliage that resembles a clump of fescue, but gives a showy reddish-purple seedhead in autumn. One species, silver beardgrass, puts out a seedhead that resembles a mass of angel hair. Also, buffalograss, a native of the loess prairie, was seeded in unirrigated roughs with excellent results. We then took plugs and put them in steep, western-facing bunker banks. There is an out-of-play area next to one of our tees that has periodic standing water. Instead of draining it, prairie cordgrass (sloughgrass) is now thriving in its natural habitat. As with the forbs, all species were irrigated during establishment for a period of two weeks and then left unirrigated.

Managing the Landscape

The management of a native landscape bed is like a normal landscape bed, except less fertilizer and water are used. One pound of a 1-1-1 ratio fertilizer is more than enough for established plants. A newly seeded area is more difficult, however. Spring weeds germinate earlier and grow faster than natives. Therefore, nitrogen should not be used on first-year seeded natives. This action would only encourage weed growth. Mow often enough to keep the area at a 6-inch height. We did this with our Indian grass planting and had a good survival. Next year, the area will be mowed around the first of June and then allowed to go on its own. This perennial grass eventually will crowd out the smaller annual weeds. Native plants spend their first year's growth establishing roots (some get to a depth of 12 feet at maturity), so be patient.

What about chemical weed control? Research is very thin on this subject. Most people who have been re-establishing natives up to this point are preservationists who do not believe in chemical control. I respect their opinion. But when a planting is done in a public area and not somewhere out of sight in a preserve, there are always lots of doubters and second guessers in the first year when weeds begin to appear. We spot treated several areas with various chemicals and found some interesting results. Some chemicals will not harm certain native grasses, but they will torch others. A randomized complete block research design will be carried out by us to produce scientifically accurate results that should benefit us in the future. Once you get through the first two years of weed-control work, the game is over. It should not be necessary to treat it chemically again.

Thatch control is needed for native prairie grasses, just as it is for turfgrasses. If left unattended for several years, the grasses begin to choke themselves out. For millennia, nature took care of prairie thatch and tree invasion with fire started by lightning. Prairie fires would rage so intensely that settlers, when trapped by these fires, would have to disembowel their horses and climb inside their carcasses to survive. Fortunately, we do not have to resort to those means. Your conservation department will gladly show you how to burn safely in your area if it is permissible. I going to control thatch in many areas by mowing and picking up the residue with a sweeper.

What is the future for native vegetation? A recent edition of Landscape Management magazine discusses how to deal with widespread water shortages in the 21st Century. Only an ostrich would believe it is not going to happen. What will my priorities be when I am told to limit water usage? Obviously, greens, tees and fairways will take priority. But will there be enough water for landscape beds and out-of-play areas? The recent San Francisco earthquake was a terrible tragedy, but it could have been unthinkable worse without construction codes developed to limit damage. We need to establish the same long-term strategy for our vegetation in order for it to survive the worst crises that mother nature offers in the future.

Native vegetation is a long-term landscaping investment. Once established, it works. Our glaciated prairie of northern Missouri was in existence for roughly 10,000 years. The unglaciated prairie of western Missouri, as well as the Ozark region and southeast lowlands, have been evolving for millions of years. The drought of 1988 was brutal, but native vegetation has been through it thousands of times without a hitch.

Many articles have been written about prairies and native vegetation that have a poetic, Zen-like connotation to them. I would not go quite that far, but for me, it was still an extraordinary experience the first time I saw a true prairie. I now am convinced that our area takes a back seat to none in terms of natural beauty. You will feel the same way about your area when you discover your natives.

(Editor's Note: Reprinted with permission from the USGA Green Section Record 1990 January/February Vol 28(1): 12-16.)



JEFFREY HARTMAN, PRESIDENT

. RENOVATION . SITE DEVELOPMENT . LANDSCAPING
. HIGH TECH DRAINAGE TECHNIQUES . DESIGN
. EXCAVATING . GRADING

(612) 443-2958
FAX (612) 443-3452

GOLF DIVISION

8011 BAVARIA ROAD
VICTORIA, MN 55386