



Brown-eyed Susan (Rudbeckia triloba) is a vigorous late summer flowering biennial.

FEATURE ARTICLE

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Evaluation of Native Midwestern Plants at Three Chicago-Area Golf Courses



In moderate shade, great blue lobelia (Lobelia siphilitica) produces attractive medium-blue flowers in late summer.



Culver's root (Veronicastrum virginicum) is a full-sun prairie native that flowers in midsummer.

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Native prairie grasses, sedges and forbs are frequently planted in out-of-play areas of Illinois golf courses. Compared with mowed out-of-play portions of courses, areas planted to native species require reduced management inputs, create wildlife habitat and enhance the golfing experience. A study was designed to improve golf course superintendents' knowledge and understanding of more than 50 native species. Native grasses, sedges and forbs were planted at three Chicago-area golf courses in full-sun and partial-shade settings. The objectives of this work were (1) to evaluate these plants to determine their aesthetic value in unmowed areas of

Midwestern golf courses and (2) to explore the long-term performance of native plants following different planting-bed preparation options.

This project took place at Olympia Fields Country Club, in the south suburbs; Cantigny Golf Club, in the western suburbs; and Skokie Country Club, in the north suburbs. During the summer of 1997, full-sun and partial-shade test areas were planted and established at each golf course. Thirty species were planted in the full-sun areas (Table 1) and 28 species were planted in the partial-shade areas (Table 2). Plants for this study were selected to rep-

resent a wide range of native grasses, sedges and forbs.

For all but two species, plugs of 2.25" x 2.25" were planted. In the full-sun installations at each course, plots 2' x 3' were planted with three plants each of the 30 species of native plants. The exceptions were U of I sand bluestem, in which case only one plant was planted per plot, and vanillagrass, in which case two plants were planted per plot. The plots were replicated three times. In the partial shade, three to five plugs of each species were grouped and planted. The partial-shade plots were not replicated. Plantings at each site were irrigated as necessary to ensure establishment.

At each site, plantings were handled differently. At Cantigny Golf Club, the full-sun area was planted into the far rough on July 2 and 3. Site preparations included removal of the existing vegetation (mostly cool-season grasses) to 1" using a string trimmer. In the partial shade, an area was treated with glyphosate and three plugs of each species were planted on July 18.

At Olympia Fields Country Club, both the full-sun and open-shade test areas were planted on July 11. The full-sun site was mowed to 2", rotary-tilled to an approximate depth of 5" and planted. Following planting of the site, trflan (Preen) was broadcast at the labeled rate to deter invasion of annual grasses and broad-leaved weeds. In the open shade, five plugs of each species were grouped and planted into the existing vegetation.

At Skokie Country Club, both the full-sun and open-shade sites were planted on July 23. Both the full-sun and partial-shade settings were treated with glyphosate and mowed to less than 2" prior to planting.

During visits to each course through 1998 and 1999, plant information was collected (flowering period, aesthetic value, height and shape). At the conclusion of the 1998 growing season, the collected data were compiled and a rating scale was developed. This rating scale is based on the collected data and the horticultural judgment of the principal investiga-

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tor. Here, aesthetic value (AV) was ranked using a 3-point scale in which 3 = an extremely attractive plant, 2 = a plant with desirable, but less showy, aesthetic characteristics, and 1 = a plant not worth establishing based on its appearance. The 1998 rating scale was also applied to the collected evaluations in 1999. The 1998 and 1999 ratings were averaged to produce a list of desirable native plants. A mean AV of 2 or 3 indicates a plant that may be of great enough aesthetic value for recommending at other Chicago-area sites.

It is important to note that the aesthetic values assigned to these species are both plant- and context-related. Plant performance is certainly related to the specific growing conditions at each golf course, management, deer browse, exotic weed competition or other episodic factors. Some of these plants assigned an AV of 1 in this study may improve to an AV of 2 or 3 when grown elsewhere. Thus, the aesthetic values in Tables 1 and 2 should be regarded as provisional and circumstance-specific.



Superintendent Don Cross (Skokie Country Club) checks on shade natives shortly after planting.

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Aesthetic value was recorded during visits to each site during the second and third years of this study. Observations and results from the full-sun and partial-shade areas are presented in Tables 1 and 2 (see pages 13 thru 16). Each table lists the scientific and common names of the native species at the three sites, plant heights, comments about each plant, 1998 and 1999 ratings of aesthetic appeal, and a mean aesthetic value (AV) rating. A differential trend in plant aesthetic value and establishment and management methods became obvious during 1998 and continued into 1999.

First, differences in plant AV were identified. Generally, plants receiving a 3 performed well in both years at all three sites, and plants receiving a mean AV of 2.5 in the full-sun plots also performed well. Several additional plants received a mean AV of 2 in the full-sun plots because of attractive flowers and/or foliage, but these plants were less uniformly reliable at all sites than those rated more highly.

In the partial-shade plots, plants having an average AV of 3 produced attractive flowers at all three sites in both years, while plants receiving an aesthetic value of 2 in the partial-shade produced attractive flowers or foliage, but may not have performed equally well at each site.

Establishment methods appeared to be related to plant performance, as was regrowth of existing species and invasion of weeds. In the full-sun plantings, plant performance was superior at Olympia Fields when compared with the plots at Cantigny or Skokie, and there was less weed invasion into the plots. Because the existing vegetation was only

trimmed to 1" prior to planting the natives in the full-sun plots at Cantigny, competition resulting from regrowth of the existing plants was expected. Natives at Olympia Fields were generally larger and more robust than those at Cantigny, where competition from existing plants was greater. In 1999, for example, U of I sand bluestem at Olympia Fields reached nearly 7' in height and was many-stemmed. The same species at Cantigny was shorter (approximately 5') and developed a much smaller clump diameter. By the end of the 1999 growing season, many of the full-sun plots at Cantigny were taken over by the Canada thistle.

The herbicide-treated cool-season grasses appeared as though they were only damaged to the ground in 1997; regrowth occurred from underground portions of the grasses in 1998 and 1999 at Skokie. Following treatment with glyphosate in 1997, the full-sun natives at Skokie performed similarly to those planted at Olympia Fields where the site was rotary-tilled and treated with Preen after planting. Regrowth of many cool-season perennial grasses (particularly bentgrasses) at Skokie occurred during 1998 and continued during 1999, and it can be speculated that competition reduced the size and attractiveness of the plants in the evaluation.

Invasion of exotic weed species into the full-sun test sites continues to be the greatest threat to success with unmowed native plantings on golf courses. Broad-leaf weeds, including chicory, Canada thistle and wild carrot, and grassy weeds such as foxtail, bentgrass, redtop, meadow fescue, quackgrass and reed canary grass, have appeared in unmowed areas at these courses and others in the Chicago area.

Future studies should be designed to evaluate chemical, mechanical and other (e.g., fallow and plowing treatments prior to planting or annual burns) weed-control methods in native plantings. In addition, aesthetic evaluation in golf course settings of other native grasses, sedges and forbs should continue as plants become commercially available.



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Nodding wild rye (*Elymus canadensis*) is sometimes used as a nurse plant in prairie establishment.