

SURVIVAL OF CREEPING BENTGRASS AND KENTUCKY BLUEGRASS ON DEFUNCT GOLF COURSES. John C. Stier, Associate Professor, Univ. Wisconsin, Madison, WI, John N. Rogers, III, Professor, Tim VanLoo and Alex Kowalewski, Graduate Research Assistants, Michigan State Univ., East Lansing, MI.

Less than 12 grass species are used as turfgrasses in the northern part of the U.S. To qualify as turf, they share the ability to maintain a perennial, contiguous groundcover under routine mowing and traffic. Fertilization and irrigation are typically used to develop desirable turf quality. Most if not all of the cool-season turf species have Eurasian origins, having been brought to the U.S. during the colonial period as livestock fodder. Most to all commonly used cool-season turfgrasses consequently appear on various invasive species listings developed by non-governmental and governmental agencies though science-based studies of invasiveness are lacking. Two of the most commonly used cool-season grasses which appear most frequently on lists of invasive or potentially invasive species are creeping bentgrass (*Agrostis stolonifera* L.) and Kentucky bluegrass (*Poa pratensis* L.). On golf courses, putting greens are virtually always planted to creeping bentgrass while Kentucky bluegrass (KBG) is often used for fairways. Both species grow best in sunny areas. KBG prefers moist, well-drained fertile soils with pH approximately 6.0-7.0. CBG is best adapted to moist, fertile soils with slightly acid to acid pH.

Since it is often impractical to observe development of natural infestations of such plants over time to determine their invasiveness, we surveyed vegetative cover on two defunct Michigan golf courses during summer 2005. Four Winds Golf Course in East Lansing was a 9-hole course that became defunct in 2003. The site was a former wetland area surrounded by paved roads and residential housing. Putting greens were constructed of a sand-based root zone mix while the rest of the course had the native organic soil characteristic of wetlands. The 18-hole Matheson Greens Golf Course outside of Northport in northern Michigan was constructed in 1990 and managed as a golf course through 2000 when its owner stopped maintaining it in order to establish a nature preserve. The area surrounding the course was forest with some streams and wetlands. The soil type was sand to loamy sand; putting greens were apparently developed using the same soil type as the rest of the golf course. CBG was used for putting greens on both courses while fairways were seeded to KBG and fine fescues (*Festuca* spp.) were planted in the primary roughs. Four transects, all originating from the apparent center of the putting greens and at right angles to one another, were established using measuring tape and GPS coordinates. A 1 x 1.5 m frame was placed on the ground along each transect at 3, 9, 18, 36, 52, 72, and 90 m distances from the putting green center. Relative abundance of vegetation types or bare soil/other (including moss, dead/disintegrating sod, leaf litter, etc.) were ranked on a scale of 0 to 5. A 0 rank indicated none was visible, 1 = 1-5% coverage, 2 = 5-25% coverage, 3 = 25-50% coverage, 4 = 50-75% coverage, and 5 = 75-100% coverage. Types of vegetative groups were CBG, KBG, fine fescues, other grasses, herbaceous dicots, and woody species. Data at similar distances along each transect (e.g., 3 m) from a single hole were averaged for each golf course. Holes were considered as completely randomized replicates. Means were analyzed by ANOVA to identify significant differences among each turfgrass type relative to other vegetation or bare soil.

At Four Winds GC putting greens were dominated by 1+ m tall thistles and asters while CBG comprised less than 50% of the living ground cover. KBG was the dominant vegetation off the putting greens but did not necessarily form uniform swards, as other species occurred including maple saplings (*Acer* spp.). Fescues were observed at similar or lesser amounts than dicots in former rough areas. CBG, KBG and fine fescues were practically absent from Matheson Greens with most of the surface bare soil or covered by dicot species. The two sites represented extreme soil type and conditions for the Upper Midwest. Data indicate CBG, KBG and fine fescues did not compete well with other plants, primarily dicots, within two years after management practices ceased. Information is still needed on medium-textured soils across a broader range of ecosystems.