

Cultivar and Traffic Effects on Population Dynamics of *Agrostis* spp. and *Poa annua* Mixtures

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Objectives:

1. Assess the population dynamics of turf mixtures comprised of annual bluegrass and individual cultivars of creeping and velvet bentgrass grown on soil- and sand-based rootzones.
2. Evaluate the influence of traffic stresses on the population dynamics of individual bentgrass cultivars mixed with annual bluegrass.
3. Identify the time of year when it is most effective to establish bentgrass cultivars with minimal annual bluegrass invasion.
4. Assess the effect of environmental conditions at the time of germination on the expression of annual or perennial biotypes in a sward containing annual bluegrass turf.

Start Date: 1998

Project Duration: 3 years

Total Funding: \$74,820

The differences in tolerance to traffic of newly released bentgrass varieties and their ability to resist annual bluegrass invasion has not been adequately studied. Trials were conducted in 1998 and 1999 on sandy loam to evaluate the influence of seeding date and bentgrass cultivar (creeping and velvet) on the amount of bentgrass that will establish in competition with annual bluegrass plants.

The least invasion of *Poa annua* during establishment occurred for the June and August seeding dates compared to the May, September, and October seeding dates. Plots renovated with Penncross had consistently lower bentgrass population than other cultivars. Penn A-4 and L-93 had consistently high bentgrass population for all seeding dates.

SR 7200 velvet bentgrass had similar bentgrass populations as Penn A-4 and L-93 in June and August seedings. However, SR 7200 had lower bentgrass



Research committee member, Dr. Paul Rieke evaluates the presence of annual bluegrass in a bentgrass establishment study conducted at Rutgers University.

population than these cultivars in the September and October seedings.

Field studies were initiated on sandy loam and sand root zones to evaluate the traffic tolerance of bentgrass cultivars and the subsequent resistance to encroachment by *Poa annua*. Plots were evaluated during 2000 for turf quality and density and the amount of *Poa annua*.

Cultivars having the capacity to produce high density turf under putting green conditions have exhibited good to excellent tolerance to both wear and compaction treatment on a sandy loam. Velvet bentgrass has considerably better tolerance of traffic stresses than previously reported.

High-density bentgrass cultivars have shown excellent resistance to annual bluegrass encroachment under a range of traffic conditions. Longer-term observation of cultivars under traffic is needed to fully assess the ability to persist under the chronic stresses of compacted soil.

All bentgrass cultivars maintained high bentgrass population (>90%) under non-trafficked conditions. Under traffic, however, large differences in bentgrass population had developed among cultivars by August 7, 2000.

The velvet bentgrass, SR 7001, has exhibited the greatest tolerance to traffic as measured by annual bluegrass invasion. Other high-density bentgrasses including Penn A1, Penn A4, and SR 7200 have exhibited good tolerance to traffic. Thus, velvet bentgrass had considerable better tolerance of traffic stresses than previously reported.



At Rutgers University, Dr. Jim Murphy has demonstrated that the establishment date of bentgrass can impact the amount of annual bluegrass present the following season.

Longer-term observation of cultivars under traffic is needed to fully assess the ability to persist under the chronic stresses of a compacted soil.

Summary Points

- The least invasion of annual bluegrass during establishment occurred for June and August seeding dates compared to the May, September, and October seeding dates.
- Plots renovated with Penncross had consistently lower bentgrass populations than A-4 and L-93.
- SR-7200 velvet bentgrass had similar populations to A-4 and L-93 in June and August seeding; however, the cultivar had lower population for September and October seeding.
- High-density creeping bentgrasses cultivars have shown excellent resistant to annual bluegrass encroachment under a range of traffic conditions.
- Velvet bentgrass had considerably better tolerance of traffic stresses than previously reported.