

RESEARCH REPORT

Poa annua-Bentgrass Competition

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Over the past few months since the beginning of the Poa annua - Bentgrass project with the Minnesota GCSA, we have made significant progress in the establishment of experiments that will give us an insight on the nature of the competition between these two species. Our aim in this experimentation has been to examine the competition between Poa annua and bentgrass, with hopes of providing information to the golf course superintendent of how to better maintain their putting greens.

In June 1985 we finished preparation of a large field experiment designed to determine if mature Poa annua gives off any type of toxins that may be affecting bent growth. In 1984 we established a source green, with plastic underlying a traditional sand-based putting green area. A 3300 sq. ft. area of Penncross was established next to an equal sized Poa annua area. Three strains of Poa annua were examined: two strains were obtained as sprigs from two older Oklahoma golf courses, and a third strain was obtained as an annual, seeded form from the seed fields of Oregon.

Water from these two sources flow into holding tanks, and from there the fluids are pumped to individual plots in a test green where the effects of the fluids are examined. There are actually 16 test greens, all built in a Purr-wick fashion to allow for the buildup of toxins. We have a total of four treatments under test in the test greens: 1) water from the Poa annua, 2) water from the Poa annua that has been filtered through chemical-removing activated charcoal, 3) water from the Penncross bent area; and 4) water directly from our irrigation system as a check.

The experiment has been in operation for four months now. An electronic controller, which monitors soil moistures in the test greens and orders the

appropriate fluid, has been functioning flawlessly since that time. Although we have been taking data regularly off this area, there have been no striking observations to date. Perhaps the effects of the Poa annua will accumulate and increase over time. We'll keep you informed on the progress.

We have also begun and completed a series of experiments with Poa annua seedling germination in the growth chamber. In this series of tests we used one basic technique: We planted 100 Poa annua seeds on a moistened blotter, allowed the seeds to germinate, flipped the blotter over, and then germinated 100 bentgrass seeds on it. In doing this, we were trying to assess the impact of germinating Poa annua on germinating bent.

Our results to date have been quite fascinating. We have found that Poa annua does indeed excrete some type of chemical compound during germination that can stunt bent germination. In fact, the effect of one single Poa annua seed on 100 bent seedlings could be detected. The stunting is usually in the vicinity of 10 to 50% reduction in initial growth of the bentgrass seedling. Sometimes the reduction is too small to be readily noticed by the human eye, but by carefully measuring hundreds of bent seedlings, the trend was confirmed. The stunting was not present when we heat killed the Poa annua seed or when we applied activated charcoal around the germinating Poa annua. This suggests the presence of a metabolic chemical given off during the germination process. Our next series of growth chamber tests is slated for December and will examine the effects of germinating Poa annua on mature bentgrass tissue.

In September we began another field experiment to follow up on some of the work we performed last fall on overseeding bent into Poa annua, and vice versa. This technique is similar to one described in the next issue of Grounds Maintenance magazine by this author.

As you can see from the above information, we are zeroing in on the effects of Poa annua on bentgrass. We plan to continue these tests for at least another year and then begin a series of studies to try to find the causal agent involved in Poa annua - bentgrass competition.