

**HOW COMPETITIVE IS *POA ANNUA*?**  
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Annual bluegrass is one of the five most widely distributed plants in the world (1), and can be found in every zone of adaptation in the United States. It easily invades and persists in irrigated, closely mown, fertilized turfgrass stands. From a competition standpoint against creeping bentgrass, annual bluegrass is more competitive in the spring and fall, while creeping bentgrass is more competitive in the summer (2). Once it invades and becomes established, annual bluegrass quickly becomes the dominant species and cultural management programs are usually adjusted to meet its growth requirements.

The success of annual bluegrass is due in large part to the evolution of different survival strategies. Among these is its ability to survive and produce vast numbers of seed, even at heights of cut less than 3.2 mm. This allows a viable seedbank to persist on greens, enabling the population to continually regenerate itself (3,4). Annual bluegrass also possesses a broad genetic base, which allows for highly varied populations to occur within relatively small areas such as a single golf green with both annual and perennial genotypes being present. The broad genetic variability is due in part to annual bluegrass' origin as a hybrid between *Poa infirma* H.B.K., an annual species, and *Poa supina* Schrad., a perennial.

In Ohio, annual bluegrass is a predominant species on older golf course greens both in northern part of the State as well as the southern part. As part of better understanding the ecology and developing programs to best manage annual bluegrass greens, the competitive ability of annual bluegrass both in and out of its native habitat was assessed.

A study was initiated in the spring of 2000 to evaluate the competitive ability of annual bluegrass. Two locations were used, The Country Club in Cleveland and the Camargo Club in Cincinnati. Both courses have a long history (over 75 years) of maintaining predominantly annual bluegrass greens. Using a standard golf course cup cutter, seventy-two plugs of annual bluegrass were randomly selected and pulled from 10 greens on each course. The plugs were fitted into the top of a PVC pipe such that the bottom of the thatch layer of each plug was in line with the top of the pipe. Thirty-six plugs were randomly selected and then transported to the opposite location. At each location, the foreign samples were established into one of three randomly selected greens. Thirty-six plugs that were left at their original location were also re-established into one of three randomly selected greens. As each plug of annual bluegrass was re-established, it was centered into a stand of 'L-93' creeping bentgrass in order to provide equal starting conditions for taking measurements. Diameter measurements of the annual bluegrass cores were taken initially on a bi-weekly then a monthly schedule for over two years.

Initially little difference in the competitive ability between the annual bluegrass plants taken from each course was observed. In the first two years, annual bluegrass grown on greens outside of their native habitat performed, with few exceptions, as well as those that were grown in their native habitat. The only exceptions were at the beginning and end of the study, when the native samples outperformed those imported from the opposite location. It is believed that the

differences that were seen at the beginning of the study were either due to additional stresses that were placed on the samples that were exported from their native habitats, or the change in environment that those populations were subjected to after they were exported. At the end of the study we did start to observe that the native annual bluegrass samples performed better than the imported ones. Adaptive differentiation in response to selection for the ability to withstand competition may be a process in annual bluegrass that takes more than two years.

### References

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