# *Evaluating New Annual Bluegrass Cultivars under Warmer Growing Conditions*

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**Objectives:**

1. To evaluate the growth and development of new *Poa annua* cultivars under warmer growing conditions.

**Start Date:** 2006
**Project Duration:** three years
**Total Funding**: $9,000

Annual bluegrass (*Poa annua*) is one of the grass species commonly found on golf course greens due to its adaptation to close mowing and high wear associated with the game of golf. Though newly constructed or renovated golf course greens start with a 100% stand of creeping bentgrass, they end up with varying percentages of *Poa annua* over a few years. Hence a lot of golf course superintendents have started to manage *Poa annua* as a dominant species on their greens.

Unfortunately, *Poa annua* cannot handle heat stress and salinity. As a result, managing *Poa annua* greens in warmer growing conditions becomes a challenge due to summer decline, disease activity, salinity stress, seedhead production especially in spring, and puffiness during the growing season (October to December and February to June).

Reduction in root depth from eight inches to as little as one inch is common on greens built to USGA specifications in warmer growing conditions. Reduction in root depth predisposes the turf to a variety of biotic and abiotic problems resulting in large areas of necrotic turf. One of the problems with reduced root depth is the inability of the USGA sand-based green to supply sufficient moisture in the upper two inches during the summer months. Stressed *Poa annua* plants are more susceptible to anthracnose and managing annual bluegrass greens during summer is a challenge for superintendents in warmer growing conditions.

The *Poa annua* breeding program at Pennsylvania State University has been developing *Poa annua* varieties for golf course greens. Twenty *Poa annua* cultivars from Penn State University were seeded on a USGA-recommended nursery green at the Industry Hills golf course in the City of Industry, CA.

*Some of the cultivars were quick to germinate while some were very slow in germination.*

The 20 cultivars of *Poa annua* were seeded in 5 ft by 3 ft plots with three replicates in a randomized block design. This is the first year of the study, so we rated the plots for germination percentage and percent plant cover. The experiment was initiated on June 7, 2006.

Some of the cultivars were quick to germinate while some were very slow in germination. Within 14 days after seeding (DAS), the cultivar PSU 99-2-5 had a significantly higher germination percentage compared to PSU 98-5-11. Though there were some differences in germination percentages between the cultivars, the data were not significantly different. The PSU 98-4-10, PSU 99-2-5, and PSU 98-2-16 cultivars had the highest germination percentage and were significantly higher than PSU 98-5-11. There was no statistically significant difference between the other cultivars.

At 45 DAS, the PSU 98-4-17 had the highest percent cover and was significantly higher than PSU 99-1-21 and PSU 98-5-11 cultivars. After two months after seeding in August, the temperatures started to rise and reached a 100º F for almost a month. This high heat adversely affected the *Poa annua* seedlings and several of the cultivars started to die. The PSU 98-5-11 and PSU 97-1-3 cultivars were most affected and almost 75% of the stand was lost. PSU 97-1-10 and PSU 01-1-36 cultivars were the least affected.

## Summary Points

- New *Poa annua* cultivars developed at Penn State University have the potential to be used commercially on golf course putting greens.
- There are differences in germination percentages between the cultivars.
- Some of the varieties are adversely affected at high summer temperatures (over 100 º F temperatures).