

# Fertility Effects on Creeping Bentgrass, Pest, Water, and Root Relationships

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## **Goals:**

- Compare new USGA sponsored bentgrasses with two industry standards for:

- shoot growth.
- root growth.
- water use.
- disease and insect tolerance.

Creeping bentgrass (*Agrostis palustris* Huds.) is the preferred species for golf greens in the upper South. The hot, humid environment of the Southeast, however, results in substantial high temperature and disease stress on this cool-season species.

The objectives of this project were to compare three experimentals from Texas A&M University with two industry standards for 1) root growth and water extraction patterns in the summer months, 2) shoot growth, and 3) disease and insect tolerances. The five bentgrasses included PENNCROSS, PENNLINKS, Syn1-88, CRENSHAW (Syn3-88), and CATO (Syn4-88).

On a 5-year old USGA specification putting green, two nitrogen fertility programs and two fungicide programs were included for each variety. The annual fertility programs were 3.5 lb N and 7.0 lb N per 1000 ft<sup>2</sup>, while the two fungicide programs were preventative and curative. For the curative program, substantial disease development was allowed before curative rates of a fungicide were applied. This allowed disease infection and recovery from disease to be monitored. The mowing height was 5/32 inches with clippings removed.

A summary of the conclusions to date are:

1. CRENSHAW and CATO exhibited significantly better visual quality and shoot density than PENNCROSS. As the summer progressed, both cultivars maintained better density and quality.
2. CATO was the only cultivar that did not exhibit

a greater deterioration in quality and shoot density in late summer at high N versus low N. This indicates that CATO could withstand higher N when needed without adversely affecting late summer performance.

3. Relative to PENNCROSS: Syn1-88 was much more susceptible to brown patch; CRENSHAW was very susceptible to dollar spot; all cultivars were more susceptible to the *Curvularia* yellow spot.
4. At the higher N regime, CRENSHAW and CATO tended to exhibit less root decline (based on percent changes in root length density) than PENNCROSS within the top 4 to 8 inches of soil. This was a trend and not a strong treatment effect.
5. CATO often extracted more soil moisture than PENNCROSS during the summer months, which would lessen the effects of indirect high temperature stress over the summer.
6. All bentgrasses were found to be equally susceptible to black cutworm induced feeding injury. All grasses were equally suitable for larval survival and growth as measured in these short-term, no-choice field studies.

Data still under analysis includes brown patch and dollar spot evaluation, thatch buildup over 3 years, and rooting. These results may alter the above conclusions to some extent.