

Evaluation of South African Bermudagrass for Shade and Drought Tolerance

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This research will evaluate nine bermudagrass germplasm accessions collected in South Africa for their ability to grow under low light intensity. These accessions were collected from areas under severe shade and are expected to have some level of genetic shade tolerance. Additionally, these materials will be evaluated for their ability to sustain growth and maintain color under no supplemental irrigation.

Treatments:

Shade Tolerance Test:

- A 100 ft x 100 ft shade structure will be established at the Turf Field Laboratory in order to evaluate these materials along with three standard cultivars (Celebration, Tifway 419, and TifSport) under two levels (60% and 80%) of shade.
- The design will be a split plot with levels of shade as the main plot and genotype as the sub-plot.
- Data will be collected at 21 day intervals on rate of establishment under shade, leaf color, and for common adaptive responses of plants to low irradiance such as increases in leaf-area ratio, leaf-to-stem mass ratio, and stem length, and decreases in specific leaf weight, plant dry weight, and root growth relative to shoot growth.

Drought Tolerance Test:

- A field test was established at the Sandhills Research Station in June 2009, in order to evaluate the same nine South African Bermudagrass accessions (along with checks Celebration, Tifway 419, and TifSport) for their ability to sustain drought.
- The design is a randomized complete block design with four replications.
- Plots will be subjected to soil dry-down periods when rainfall is not forecasted. At the beginning of each dry-down the soil will be well irrigated and then irrigation will be withheld. During this drought stress periods data will be collected on leaf firing and wilt incidence. Additionally, data will be collected on root length and weight, and turf quality and color.