

19. The grasses established from sod, and dogs were fenced out of the plot area for 2 weeks after the sod was laid. The area was kept well watered for these 2 weeks.

During the first season of observation, all grasses except for the tall fescue performed well. No grass variety was found to attract more dog excrement than any other variety. Dog urine spots occurred in all varieties but none lasted for more than a week. This was a very rainy summer in Starkville and the seashore paspalum cultivars had some problems with disease, but the grass did come back when the disease pressure lessened. The plots were not located in very high traffic areas of the park and it is doubtful any grass would hold up well in these areas, such as along the fence, and near the gate areas.

The fall of 2009 was one of the wettest on record in Starkville and soil at the site remained saturated for much of this period and the winter of 2009-2010 had some of the lowest temperatures we have seen in the last decade. In the spring of 2010 it appeared that some plots of centipede grass and St. Augustine grass had not survived the winter well. All the rhizomatous warm season grasses tested survived the winter with more than 50% cover of the intended grass on May 15, 2010.

Plots of these grasses were also established on our research farm for a more controlled test of the effects of dog urine on grasses. That experiment will be conducted this summer.-Dr. Barry Stewart

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Seeded bermudagrass blends have generally been discouraged because of concerns with turf uniformity due to the different morphologies and colors of multiple varieties. Superior cold-hardy varieties such as Riviera have proven to be well adapted to Virginia's climate, but the seed is very expensive and the grass is typically one of the slowest bermudagrasses to establish. What would be the outcome of blending Riviera seed with Common bermudagrass, a low-cost, cold intolerant variety, or Wrangler, a cold-tolerant, slightly cheaper cultivar developed for animal grazing systems? The hypothesis was that the improved Riviera variety would ultimately dominate the stand.

To test our hypothesis, Riviera seed was blended with Wrangler or Arizona Common

at 0, 25, 50, 75, or 100 % by weight and seeded at either 0.5 or 1 lb pure live seed per 1000 sq ft in Blacksburg, VA in the summer of 2004. A commercially available blend, Riata (containing 60% Wrangler and 40% Riviera by weight) was also included in the experiment. The plots were maintained at a 0.75 in cutting height (all clippings returned) by mowing twice per week during the active growing season. The plots received a total of 3 lbs of N/1000 sq ft per summer season (1 lb N/1000 sq ft every 4 weeks) each year. No supplemental irrigation was supplied after establishment. Data were collected on % establishment rates, visual turf quality, and spring greening characteristics. At study completion in late summer 2007, all plots were allowed to go to seed in order to measure for visually distinct differences in seedhead heights.

Establishment rates. As expected, the 1 lb/1000 sq ft seeding level tended to provide quicker establishment rates for all treatments in year one as compared to the 0.5 lb/1000 sq ft level, but there were no significant differences in other treatment responses between the seeding levels beyond initial establishment. There were no significant trends in establishment rates for any blend at the 0.5 lb/1000 sq ft seeding level. However, there was a significant linear increase in ground cover as % Riviera increased in R/W blends. As larger percentages of Common were blended with Riviera, plot establishment rates tended to increase, but were only significant at the 1 lb/1000 sq ft seeding level on one date in July 2004. Riviera establishment from seed has consistently been slower than other seeded bermudagrasses in Virginia Tech research trials and led to our hypothesis that blending the fast establishing Common with Riviera could improve establishment and coverage ratings.

Spring greening. As spring greening progressed in all studies, the increase in % Riviera in blends with Wrangler resulted in linear increases in spring greening rate. In addition, significant positive linear and quadratic trends were recorded for spring greening as the % Riviera increased in blends with Common bermudagrass. The spring greening advantage of the more cold tolerant Riviera as compared to Common increases the competitive advantage of Riviera in dominating stand densities of these seed blends over time.

Visual turf quality. Significant linear and quadratic responses in visual turf quality were evidenced at all rating dates as % Riviera increased in R/W blends. Similarly, significant linear trends were evidenced at all rating dates as % Riviera increased in R/C blends, and significant quadratic trends were observed at 2 of the 5 rating dates in 2006 and all rating dates in 2007. The significance of the quadratic trends is that this indicates that treatments containing 50% Riviera by weight are visually similar in quality to treatments that were either 75 or 100% Riviera.

Seedhead height data. All R/C blends had significantly different mean seedhead heights from the 100% Riviera and Common standards, but were statistically similar to each other. All R/W blends had significantly different seedhead heights from the 100% Wrangler plots, and all heights for R/W blends were statistically similar (including the commercially available Riata blend). These quantitative data support the results of the subjective visual quality ratings in indicating that shifts in bermudagrass population over time favor Riviera.

In a transition zone climate, blending an improved turf-type bermudagrass variety that is highly adapted to the transition zone (Riviera) with lower quality, cheaper bermudagrasses (Common and Wrangler) resulted in:

- Riviera began to dominate the blends as early as the second growing season with as little as 25% Riviera in the initial seed blend with Common or Wrangler, resulting in a dense, high quality turf maintained at a 0.75 inch height.
- The Common component of the R/C blends was advantageous in first season establishment rates, but not at the expense of the ultimate goal of Riviera succession.
- Blending Riviera with cheaper seeded bermudagrasses offers the potential for savings of 25 to 75% of seed costs.

Blending superior cold-tolerant varieties of bermudagrass with lower cost, less persistent varieties is a viable grassing alternative for transition zone athletic fields. This strategy puts the likelihood of extreme winter temperatures to work for you in shifting the competitive advantage to the improved varieties.-Mike Goatley, Jr. ■