



**Figure 7. Clones were planted on 3-foot centers.**

Sixty clones that survived the mild winter of 1997-1998 in Missouri and exhibited good seed production were planted in turf plots in spring, 1998, for further evaluation. In addition, 56 clones that were brought from Rutgers University, in cooperation with both Drs. Funk and Meyer were planted in plots adjacent to the Missouri selections. The Rutgers material will be evaluated in both Missouri and New Jersey.

Several laboratory studies were conducted to characterize the germination process and evaluate factors affecting seed dormancy. The floret consists of a caryopsis that is covered by a lemma and palea that adhere tightly. The lemma is very thick, has thickened cell walls and a wax coating on the outer surface that may restrict water penetration. Naked caryopses (lemma and palea removed) germinated up to 80 percent at 22 °C, whereas intact florets germinate less than 10 percent. Florets that were cut transversely either at the base (below embryo) or at the tip (above embryo) germinated almost as well as naked caryopses.

These results suggested that water uptake is a dormancy factor. Water extracts of florets did not affect germination of naked caryopses, but inhibited germination of base and tip cut florets by 25 percent. The nature of the germination is not known. At 35 °C light and 20 °C dark, 90 percent of untreated florets germinated, even in the extract treatment. This indicates the need for high temperature in order for rapid germination to occur. Thirty-percent KOH scarification (15 min.) enhanced germination at 35/20 °C up to 98 percent. Seed treatments can overcome dormancy, which appears to be partially physical, and improve germination. To understand the genetics of the process we developed 19 half-sib families. These will be evaluated for germination properties in the future. ¶

## On-Site Testing Putting Green Variety Trial

### National Turfgrass Evaluation Program

*Kevin Morris*

Start Date: 1996

Number of Years: 5

Total Funding: \$71,600

Objectives:

*Provide bentgrass and bermudagrass putting green trials on golf course practice putting greens.*

The Golf Course Superintendents Association of America (GCSAA), United States Golf Association (USGA) Green Section and National Turfgrass Evaluation Program (NTEP) jointly sponsored on-site trials for bentgrass and bermudagrass cultivars grown on USGA specification putting greens.

**Location of Trial Sites.** The sixteen sites, course superintendents, and research cooperators are named in Table 10. The bentgrass trial sites are established. The Snoqualmie Ridge Golf Course in Snoqualmie, Washington was the last to be selected and seeded. It is established and has received limited play. It should be in excellent shape for next season.

The bermudagrass sites are constructed and established. Progress on all trial sites is meeting expectations.

**Site Visits.** As of the date of this report, we have visited trials. All sites visited are doing well. Cooperation is outstanding and enthusiasm among researcher cooperators, host course superintendents, and golfers is extremely positive. Research cooperators will submit their data to NTEP for analysis later this winter. The NTEP will summarize the data and report the first year's results in spring, 1999. A meeting to discuss the on-site trials is scheduled for the GCSAA Conference and Show in Orlando. This meeting will serve as a "feedback mechanism", allowing comment and discussion from the researchers and host superintendents. We will use this information to make appropriate adjustments in data collection and analysis during the 1999-growing season. ¶

**Table 10. The GCSAA/USGA/NTEP on-site trials for bentgrass and bermudagrass grown on USGA specification putting greens. Grasses being evaluated at each site are indicated in parenthesis.**

Host Club	Course Superintendent	Research Cooperator
1. Bent Tree Country Club Dallas, Texas (Bentgrass & Bermudagrass)	Keith Ihms	Dr. Milt Engelke
2. Lassing Pointe Golf Course Florence, Kentucky (Bentgrass)	Jerry Coldiron	Dr. A. J. Powell
3. Country Club of Mobile Mobile, Alabama (Bermudagrass)	Ron Wright	Dr. Bryan Unruh
4. Crystal Springs Golf Course Burlingame, California (Bentgrass)	Ray Davies	Dr. Ali Harivandi
5. Fox Hollow at Lakewood Lakewood, Colorado (Bentgrass)	Don Tolson	Dr. Tony Koski
6. Snoqualmie Ridge Golf Course Snoqualmie, Washington (Bentgrass)	Mark Cupit	Dr. Gwen Stahnke
7. Lakeside Country Club Houston, Texas (Bermudagrass)	Mike Sandburg	Dr. Richard White
8. North Shore Country Club Glenview, Illinois (Bentgrass)	Dan Dinelli	Dr. Tom Voigt
9. Purdue University North Course West Lafayette, Indiana (Bentgrass)	Jim Scott	Dr. Clark Throssell
10. SCGA Members Club Murrieta, California (Bentgrass & Bermudagrass)	John Martinez	Dr. Robert Green
11. Country Club of Birmingham Birmingham, Alabama (Bentgrass & Bermudagrass)	Lee Mc Lemore	Dr. Elizabeth Guertal
12. Country Club of Green Valley Green Valley, Arizona (Bentgrass & Bermudagrass)	Mark Clark	Dr. David Kopec
13. Jupiter Island Club Hobe Sound, Florida (Bermudagrass)	Rob Kloska	Dr. John Cisar
14. The Missouri Bluffs St. Charles, Missouri (Bentgrass and Bermudagrass)	Robert Deardeuff	Dr. John Dunn
15. Westchester Country Club Rye, New York (Bentgrass)	Joe Alonzi	Dr. Jim Murphy
16. Westwood Golf Course Vienna, Virginia (Bentgrass)	Walter Montross	Dr. David Chalmers