BENTGRASS VARIETY TRIALS

By Pat Zurawski

Planning for the construction or renovation of golf greens and tees or fairways eventually leads to a very key question. What variety of bentgrass should be used? Should I stay with what I now have or do I dare try a newer variety? The reason these questions are so difficult to answer is the fact that bentgrass variety performance can change substantially from one location to another.

The need to renovate the bentgrass nursery at the Blackhawk Country Club created the opportunity to examine the performance of different bentgrass varieties under our conditions. This report covers varietal differences observed just during the period of establishment. Next season we will look for differences in things such as winter injury, percent ground cover, color, growth habit and disease incidence.

Seed of ten bentgrass varieties was graciously provided for us by Chris Wendorf, Olds Seed Company. In addition to bentgrass variety, two other variables were introduced into the study. One was seeding rate. All varieties were seeded at rates of 1, 2 and 3 pounds/100ft². The third variable was seeding practices. These are identified in Table 2.

The layout of the plots is shown in Figure 1. Preparation of the plot area involved stripping off remnants of the old bentgrass nursery and laying down a 2-to-3 inch layer of top dressing mix prior to seeding. The plots were seeded September 11 when the soil temperature was 60°F.

The ten bentgrass varieties planted, their sources, and origins are as follows:

Pennway: This variety was introduced in 1983 by the Tee-2 Green Corporation. It is a blend of 25% certified Penncross, 25% certified Penneagle and 50% uncertified seed.

Penncross: This is first generation seed from random crossing of three clonal bentgrass strains. A Penn State University release, it is the product of breeding work begun by Dr. Burt Musser in the 1930s.

Pennlinks: This is second generation seed originating from breeding work initiated by Dr. J.M. Duich in 1964. Included in its genetic makeup is a South German bentgrass and nine Penn State experimental breeding lines. This variety first became readily available in 1987.

Penneagle: This, too, was developed by Dr. J.M. Duich. Its development began with 156 vegetatively propagated bentgrasses. Penneagle was released after 18 years of crossing and selection followed by five years of field testing.

Putter: This variety is a recent release from the Jacklin Seed Company. It was selected from crosses made over a number of years by Drs. Roy Goss and Stan Braven at Washington State University.

Prominent: This variety was developed and released by Seed Research of Oregon, Inc.

SR1020: This is another release from Seed Research of Oregon. Its development began in 1971 with 93 bentgrass clones collected from southwestern U.S. golf courses by Dr. Robert Kneebone. Five of these clones were selected in 1982 to become the parental clones of SR1020.

Providence (SR1019): Another product of Seed Research of Oregon, this variety was developed from five bentgrass clones selected by Dr. Richard Skogley at the University of Rhode Island.

Carmen: Produced by Van DerHave Oregon, Inc., this is a recent release for which little information is available.

National: Pickseed West, Inc., developed and produces seed of this variety. Its origin is several selections made from Canadian golf courses. Seed is available in the U.S. and Canada but supplies are limited.

OBSERVATIONS

Sufficient color was showing seven days after seeding to allow ranking of the bentgrass varieties at each of the three seeding rates. As shown in Table 1, National had the fastest rate of emergence and was closely followed by Penncross. Prominent was clearly the slowest to emerge. Slow emergence seemed to be a characteristic of all three of the Seed Research of Oregon varieties.

Color development rankings were done within each seeding rate rather than across rates. Thus, seeding rate effects are not reflected in the data in Table 1. The general impression gained from viewing the plots was that the amounts of green showing seven days after seeding was decidedly greater at the two rather than the one pound seeding rate but there was no difference between the two and three pound rates.

TABLE 1.
BENTGRASS STAND RATINGS* FOR EACH SEEDING RATE SEVEN DAYS AFTER SEEDING

BENTGRASS	SEEDING RATE lb/100ft²			AVERAGE
VARIETY	1	2	3	RATING
Pennway	4	3	2	3.0
Penncross	2	2	3	2.3
Pennilinks	7	5	5	5.7
Penneagle	3	4	6	4.3
Putter	5	6	4	5.0
Prominent	10	10	10	10.0
SR1020	9	8	8	8.3
Providence	8	9	7	8.0
Carmen	6	7	9	7.3
National	1	1	1	1.0

*1 = Best, 10 = worst

Seedling counts were made ten days after seeding to assess the effects of seeding practices on bentgrass stand. The first thing to note are the average stand counts for each

bentgrass variety (Table 2). These counts correspond quite well with the averages of the coloration rankings made three days earlier (Figure 2). Thus, for the most part, the emergence rate between days seven and 10 was the same for all varieties. Exceptions to this general rule were Pennlinks and Penneagle. Pennlinks apparently had a greater than average number of seedings emerge in this three-day period while emergence of Penneagle was less than average.

Effects of the seeding practices on seedling populations at ten days showed some varietal specificity (Table 2). For example, the average effect of raking plus rolling of the seedbed after drop seeding of the bentgrass was to increase seedling populations by 80%. However, on an individual variety basis, the effect of raking and rolling on seedling populations ranged from a 14% reduction for Putter to a 967% increase for Providence.

The effects of starter fertilizer (Scotts 19-26-5 at rates of 1.0 and 0.5 lbN) on seedling populations were not nearly as great as the effects of raking and rolling of the seedbed (Table 2). Without raking, starter fertilizer tended to reduce average seedling populations 20%. Raking, on the other hand, led to an average increase in seedling populations of 16%. Average seedling populations were essentially not affected by starter fertilizer rate changes.

Varietal responses to starter fertilizer were extremely variable (Table 2). In the case of Penncross, for example, starter fertilizer reduced seedling populations an average of 66% when not raked and 38% when raked. On the other hand, starter fertilizer fairly consistently increased seedling populations for those varieties having the lowest populations in the study.

On the average, a light application of topdressing mix had little effect on seedling populations when compared to the not raked or rolled treatment (Table 2). It seems rather clear that topdressing is no substitute for raking and rolling when seeding is by way of a drop spreader.

TABLE 2.

EFFECTS OF SEEDING PRACTICES ON BENTGRASS SEEDLING POPULATIONS TEN DAYS AFTER SEEDING

	PENNWAY	PENNCROSS	PENNLINKS	PENNEAGLE	PUTTER	PROMINENT	SR 1020	PROVIDENCE	CARMEN	NATIONAL	Average
	NUMBER OF SEEDLINGS PER SQUARE INCH										
Not Raked or Rolled	21	30	27	12	14	0	5	3	4	31	15
Raked	20	36	35	17	22	0	8	2	4	37	18
Rolled	28	37	33	19	30	1	10	4	7	54	22
Raked and Rolled	60	34	28	5	12	0	16	32	22	64	27
Normal Fert. Not Raked	10	9	20	10	21	0	5	11	14	21	12
Normal Fert. Raked	41	23	33	13	30	0	12	11	27	29	22
½ Normal Fert. Not Raked	8	11	18	13	16	0	7	7	13	26	12
½ Normal Fert. Raked	18	22	30	15	24	0	13	12	26	35	20
Topdressed	20	31	30	12	24	0	11	2	3	22	16
AVERAGE	25	26	28	13	21	◄1	10	9	13	35	

Fig. 1. Plot layout. The bentgrass varieties are seeded side-by-side in strips running from the front to the rear of the plot area. Feeding practices traverse the plot area in the opposite direction.

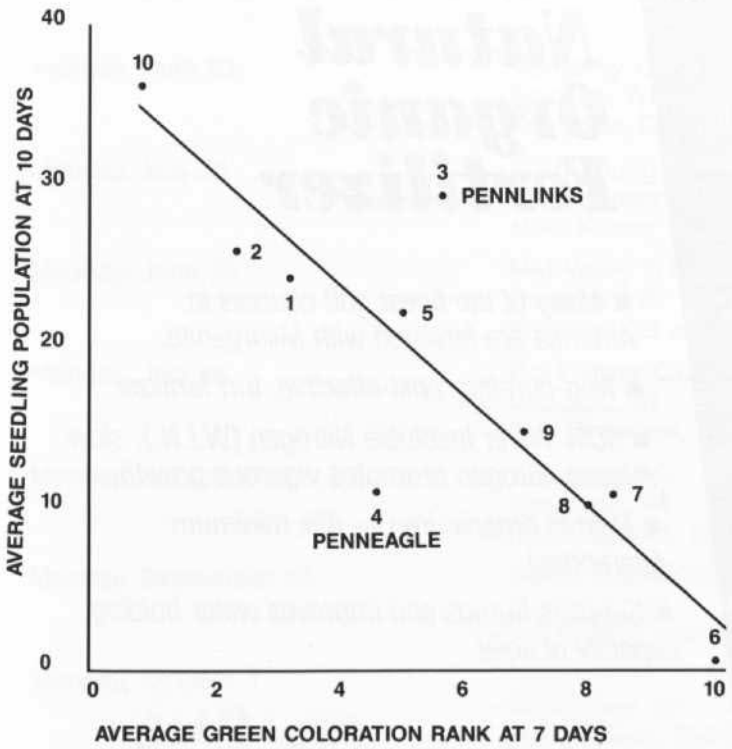

Fig. 2. Relationship between visual greening of the plots and seeding populations.

SUMMARY

The wide range in emergence rates for the ten bentgrass varieties included in this study was much greater than anticipated. It is not known at this time whether these differences are inherent characteristics, unique to the study site, or the result of differences in seed viability. Perhaps some of these differences will be less noticeable next season.

Raking and rolling are clearly the keys to establishment of good stands of bentgrass when the seed is drop spread. Topdressing does not substitute for raking and rolling. The need for starter fertilizer early in the establishment period was not readily evident. This observation may well be different next spring.

Editor's Note: Pat Zurawski is the assistant golf course superintendent at Blackhawk Country Club. This project and report were submitted as requirements for Soil Science 699 and were conducted under the direction of Dr. Wayne R. Kussow.

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