

# A-4, Not Your Parents' Bentgrass

*New management techniques for a new bentgrass variety.*

by CUTLER ROBINSON, CGCS

**B**AYVILLE GOLF CLUB began as a vision to build a world-class golf course in Virginia Beach, Virginia. Every aspect of this project focused on having a great golfing facility; all other amenities were secondary. The selection of Tom Fazio as the golf course architect heightened the anticipation for a great golf course. When I was selected as superintendent in January of 1995, the honor, impending challenge, and responsibility were daunting.

The plans for the project as prepared by Fazio Golf Course Designers were very detailed and thorough. The selection of grasses and plant materials was consistent with what would be considered standard for the area. The owners and architect maintained a keen sensitivity to the surrounding environment and mandated that only native grasses, shrubs, and trees be used in the out-of-play areas. The fairways, tees, and primary rough turf were to be planted to 419 bermudagrass, with Crenshaw bentgrass specified for the greens. However, during the winter of 1995, I was introduced to the new Penn series of bentgrasses.

Keith Hall, Dave Donovan, and Bud Brown showed me the new Penn A-1 at their project, the Pointe Golf Course in Powell's Point, North Carolina. My interest in these new bentgrass varieties was piqued further when Dr. Melodee Fraser showed me slides of Penn A-4. After viewing the slides, it was clear that these new grasses offered a surface density similar to high quality perennial *Poa annua* (*Poa annua* var. *reptans*). The density of the stand of turf was truly amazing. Continued fact-finding provided evidence that the new bentgrass varieties would survive and even thrive under management regimens generally associated with championship preparation. With research in hand, I proposed to Bob Stanton (the club's development chairman) and Tom Marzolf (Senior Design Associate) that we seed our greens to A-4 creeping

bentgrass. With the guidance and assistance of USGA agronomists Keith Happ and Stanley Zontek, it was agreed that A-4 would be used on the greens at Bayville Golf Club.

The greens were built in strict compliance with the USGA recommendations for putting green construction. We attempted to balance pre-plant nutritional levels in the greensmix by utilizing a combination of organic and synthetic materials. We formulated our pre-plant nutrition to balance our soil fertility while including natural organic sources of nitrogen.

The pre-plant fertilization for the greens at Bayville Golf Club were as follows:

Product	Analysis	Description	Rate
Harmony-greens fertilizer	14-3-6	natural organic/bridge product	5 lbs./1000 sq. ft.
Harmony-HI K fertilizer	6-2-12	natural organic/bridge product	5 lbs./1000 sq. ft.
Lebanon-starter fertilizer	10-18-18	greens starter fertilizer	5 lbs./1000 sq. ft.
Scott's STEP		granular micronutrient package	2 lbs./1000 sq. ft.
Dolomitic lime		magnesium & calcium source	10 lbs./1000 sq. ft.
Calcitic lime		pH adjustment & calcium source	5 lbs./1000 sq. ft.
Aqua root		humate source	2.5 lbs./1000 sq. ft.

Fertilizer selection and rates of application were based upon soil testing and experience.

The greens were seeded with A-4 during the summer of 1995. After the rough grading and finished contours were completed and approved on each hole, bermudagrass sprigs and sod were planted, and sand was placed in bunkers. This timeline meant establishing bentgrass during the extreme heat of June through August. However, this proved to be the right decision and resulted in a more mature turf when we opened in November of the same year.

As the turf matured through the fall of 1995, we found that lower mowing heights improved playing quality and general turf health. The crowns and

shoots of the plants were bunched so tightly that the mowers had a tough time removing the previous day's growth. Even after mowing, the surfaces appeared puffy. Lowering the height of cut and mowing more frequently improved the appearance and playability of the turf. During the spring of 1996 we learned the height at which the grass could be cut was limited by the equipment, rather than the turf. It may be hard to imagine, but for this turf, lowering the mowing height did not negatively affect turf health. We tested various mowers and setups to find the lowest effective mowing height. If scalping occurred, the crowns sent up new shoots quickly. The bruised

areas healed completely in a few days.

While experimenting with mowing procedures, we also were fine tuning our topdressing program. As with any good topdressing program, our goal was to apply the topdressing material at a rate that matched growth. We wanted to manage thatch and the mat layer. However, we quickly learned that working the sand through such a tight, dense turf was a challenge. Any particles over 0.50mm sat on the surface and damaged mowers and affected playability. Eventually, and with persistence, a weekly schedule of light topdressing provided the consistent blend of thatch, air, and soil desired. The topdressing also provided a degree of

resiliency that allowed frequent use of rollers to improve ball roll and the firmness of the putting surface.

The propensity of A-4 to form such a dense mat creates a potential threat of excessive thatch accumulation. Maintaining the lowest height of cut possible, along with weekly topdressings, helps us keep thatch under control. These practices also provide a firm, smooth putting surface. Our mowing/player preparation practices for 1997 were as follows:

Procedure	Number of times in 1997
Double cut (.100")	169
Double roll (Salsco)	32
Single cut (.100")	93
Single roll (Salsco)	157

It may seem extreme or excessive to mow and roll so frequently, but we consider these procedures essential to control thatch and satisfy our players. The costs of these procedures are offset by the turf's tolerance of environmental extremes and disease pressure. Pesticides and hand watering were not needed as much as we thought.

Over time, we also learned to streamline our procedures to maximize our results and minimize labor. During normal conditions, two people can topdress and brush the greens. We use the Grains Keeper Brush to work the topdressing into the surface. This tool allows us to complete this much-needed task ahead of the play while not affecting surface quality or damaging the turf. The Grains Keeper Brush has proven to be an excellent investment.

The use of an extremely clean and uniform topdressing material keeps mower damage to a minimum. During our experimental period, our equipment manager, Mike Flint, kept the mowers in tip-top condition. His efforts have been integral to our success, along with carefully selecting a topdressing material.

Our topdressing program continues to be fine-tuned. We now attempt to apply 30 to 35 topdressings per year. Environmental conditions guide us as to the rate of sand applied and the method by which it is worked into the turf. On most occasions, we topdress behind the mowers with a pendulum-type spreader and then broom the greens with the mechanical brush. The mechanical brush is not overly abrasive to the turf canopy. The upright growth pattern of the A-4 turf seems to allow



*A-4 has a propensity to form a dense organic mat. By maintaining the lowest height of cut possible, in addition to applying weekly topdressings, thatch accumulation is kept under control.*

the brushes to glide over the canopy. Under environmentally stressful conditions (extreme heat and high humidity), the sand is hand watered in, rather than brushed.

No matter the conditions, a wetting agent is applied once a month on top of the topdressing sand and watered in. We proactively attack hydrophobic soil conditions. Offering the players a high-quality product immediately following each maintenance procedure is paramount.

The greens are aerified four times a year with ¼" quadratines. We treat in March, June, September, and November. The use of these smaller tines offers agronomic benefit while not adversely affecting playability. The small holes also heal quickly. Coring procedures

are supplemented by four to six Hydro-Ject treatments per season.

We have experienced few disease or insect problems. During environmentally stressful periods the A-4 has performed beautifully. It has demonstrated excellent recuperative potential following drought stress, much better than other bentgrasses I have managed.

The occurrence of *Poa annua* has been so minimal that a little hand picking and plugging in April eradicates this scourge. Maintaining a healthy stand of turf through the stressful summer is the best method of annual bluegrass prevention.

A general misconception of guests to Bayville is that the new type of grass on our greens is the reason our surfaces are so enjoyable to play. The reality is



*Equipment maintenance is as important as ever when dealing with the new bentgrass varieties. During our learning and experimental period our equipment manager, Mike Flint, kept the mowers in top condition. His efforts have been integral to our success.*

that the grass can be managed to its full potential because the factors affecting its growth have been carefully skewed in its favor. The following factors have influenced the results achieved at Bayville:

- Use of golf spikes that do not pierce the leaves of the grass (non-metal).

- Meticulously constructed USGA-spec greens on sites that offer good light and air flow.

- Sound management via equipment availability and labor resources (through the support of the club's board approving equipment and labor resources).

- Establishing a variety of grass that has been genetically predisposed for specific playing characteristics.

Bert Crawford, green chairman at Bayville Golf Club, and I have worked

closely to maximize player satisfaction at the club. His advice and guidance have had a positive impact on the product we offer. One bit of advice he gave regarding the management of our A-4 greens has held true. He said, "Life is an adaptation." I believe much of the success we have experienced with this grass is due to our willingness to be flexible and our ability to adapt specific procedures that provide the desired results. The staff is extremely flexible and understanding of the dynamics of environmental influences on turfgrass growth. Textbook or outlined procedures could never supplant in-the-field, on-the-spot decision making.

We have found that players of all skill levels adapt very well to Stimp-meter readings above 11 feet when this playing condition is offered on a consistent basis. The greatest challenge to

the average player is stopping the ball on the putting surface, especially when the hole is playing downwind. For us, it is clear that healthy, firm, and fast putting surfaces heighten the enjoyment of golf. As turfgrasses and maintenance practices continue to improve, more and more people will be able to experience the exhilaration of playing championship conditions.

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CUTLER ROBINSON has been a golf course superintendent since 1982. Cutler was the superintendent at Elizabeth Manor Golf and Country Club in Portsmouth, Virginia, from 1986 until he assumed the duties at Bayville in 1995. He became a Certified Golf Course Superintendent in 1990 and has continued his postgraduate work in plant physiology, pathology, and weed science at VPI, working toward his master's degree.

*The following table is based on the management of Elizabeth Manor Golf and Country Club during 1994 as compared to the management of Bayville Golf Club in 1997.*

### **A-4 Greens Management Cost Comparison to Penncross**

Bayville Golf Club (A-4) with USGA green construction (1997) vs. Elizabeth Manor Golf and Country Club (Penncross with 25% *Poa annua*) with push-up/soil-based green construction (1994 management procedures)

- All dollars at 1997 cost (i.e., supplies and labor)
- Bayville has 150,000 sq. ft. of bentgrass, Elizabeth Manor has 100,000 sq. ft.

<b>Procedure</b>	<b>Bayville 1997</b>	<b>Cost</b>	<b>Cost/ 1000 sq. ft.</b>	<b>Elizabeth Manor 1994 Total</b>	<b>1997 Cost</b>	<b>Cost/ 1000 sq. ft.</b>
<b>Mowing</b>	5524 man-hours*	38,668	257.79	3200 man-hours	22,400	224.00
<b>Rolling</b>	785 man-hours	5,495	36.63	200 man-hours	1,400	14.00
<b>Topdressing</b>	594 man-hours 176 tons of sand at \$42/ton	4,158 7,392	27.72 49.28	150 man-hours 120 tons of sand at \$22/ton	1,050 2,640	10.50 26.40
<b>IPM</b>	labor and management			no significant difference		
<b>Plant Protectants</b>	disease, insect, and weed control	12,280	81.87	disease, insect, and weed control	10,500	105.00
<b>Fertilizer and Soil Treatments</b>	NPK, micros, Primer, misc., etc.	7,750	51.67	NPK, micros, agents, misc., etc.	7,500	75.00
<b>Equipment Maintenance</b>	parts: bedknives, reels; fuel, etc. labor/technician, 900 man-hours*	12,500	83.33	parts: bedknives, reels; fuel, etc. labor, 400 man-hours	5,500	55.00
<b>Aeration</b>	Quadratine and Hydroject 360 man-hours	2,520	16.80	Verti-Drain, coring, and Hydroject 240 man-hours	1,680	16.80
<b>Hand Watering</b>	400 man-hours	2,800	18.66	400 man-hours	2,800	28.00
<b>TOTAL</b>			<b>\$714</b>			<b>\$615</b>

**Equates to \$0.10 (ten cents) per square foot in additional maintenance costs per year**  
(for a course with 150,000 sq. ft. of bentgrass = \$15,000/year additional cost)

Not included: cost of management, equipment depreciation, storage, and insurance

\*All hourly rates based on \$7.00/hour average wage, except equipment maintenance, which is based on \$15.00/hour