

ameter tine and go 8 inches deep. We topdress heavily behind them.

We use our small tines through the summer if needed for compaction or hot spots. In August we will come in ourselves and aerify with a 5/8 tines on Coremasters. We will also topdress heavily behind this operation. We also spike greens monthly in the winter with every topdressing.

F. Irrigation Practices

We irrigate on a daily schedule normally. We are always adjusting the amount that we put on them. We are a test site for Toro Irrigation and are presently testing a new controller system for them. We run set amounts and change percentages almost daily. We use a rain gauge for automatic shut off. We will put a wetting agent on them biweekly and will hand-water them on a regular basis during the week.

G. General Comments

During our greens construction, we did make several minor changes to some of the greens with severe contouring. We took areas that had a 9 to 10 degree fall to 3 to 4 degrees of fall. They still have very good movement but now have more cup locations.

Scalping with the new surfaces has not been a factor.

The greens seem to get a little harder and drier under drought conditions, but overall in their first year have done very well. As for ball speed, they are not as quick as I would have thought from changing grass types, but they have the ability to become very fast without stressing the turf.

We rebuilt 21 greens and completed seven other projects and we only spent \$217,000. We opened in 110 days. We are very happy with the FloraDwarf!

ALAN PUCKETT

Golf Course Superintendent

Orange Lake Resort

Orange Lake is a time share resort. The decision to use FloraDwarf on the new Legends Golf Course was recommended by the architect, Harrison Minchew of Palmer Design, and one that I was very excited about.

After numerous meetings with Orange Lake management discussing the pros and cons of using this new grass, we decided to use FloraDwarf.

I. Grow-in and Establishment

On July 8, 1998 the first green was sprigged with FloraDwarf at the rate of 30 bushels per 1,000 sq. ft.. The greens were built to USGA specifications (no choker layer) with an 85/15 greens mix. I was alarmed by the initial appearance of the sprigs. In comparison to Tifdwarf sprigs, they looked more like clippings instead of stolons.

A. Irrigation

We watered the new sprigs for 10-15 minutes every hour from daybreak until 7 p.m. This watering schedule continued for two weeks. At that point we reduced the watering to two daily cycles and adjusted as conditions dictated. As the turf filled in and a root system developed, we backed off to a single cycle during the evening hours.

B. Fertility

Prior to sprigging, a preplant fertilizer was applied. One week after sprigging, we alternated 21-0-0 and 15-5-15 weekly for the next five weeks. During the fifth and sixth weeks, we were not pleased with the results. Soil testing showed calcium and magnesium deficiencies. This was corrected by an application of dolomitic limestone at 20 lbs./1,000 sq. ft.

In the sixth week we began applying 14-4-14 with an increased minor package alternating with the 21-0-0. All applications were calibrated to apply .5 - .75 lbs. of nitrogen/1,000sq. ft. During the tenth week we started fertilizing on a two-week interval using 13-2-13 or 17-1-10. Soil tests were conducted three times during the grow-in phase to assure proper nutrients were being applied.

C. Rolling

We started rolling the greens during the fourth week of the process. A 1.25-ton roller was used only once due to concerns of flattening or reducing the original contours in the putting surfaces. We shifted to a standard Speed Roller and rolled weekly or as needed.

D. Mowing

In week three we began mowing the green with John Deere 220A walk mowers set at .187 inches. Some of my peers suggested mowing them at .125 during grow-in, but we were not happy with the results. A couple of the greens were nearly mowed to death at this height in less than two weeks. Needless to say I became very conservative and the HOC was raised to .150

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until the greens were fully covered, which took about eight to ten weeks.

We had three greens that could have been considered playable in six to seven weeks. As we approached opening day, the HOC was lowered to .130 and provided a quality putting surface with a stimpmeter reading of 8.5. The goal for opening day was 8.5 - 9.0. This is when we realized that we could achieve good speeds under normal daily mowing conditions.

E. Topdressing

This program also began in the third week of grow-in. Great care was taken not to rut or disrupt the putting surfaces with the turning motion of the equipment. A Meter-Matic with the gate set wide open was pulled behind a John Deere Gator 4x2 to apply the maximum amount of sand.

The first three applications of 85/15 were made once a week. Then we switched to 90/10 in week four and began using a Terra Topper for lighter applications. The gates were also wide open but we adjusted our ground speed to apply the necessary amounts of mix.

We verticut before topdressing during the fifth week after sprigging. The bench setting on the verticut reels was 1/8 inch. Verticutting was performed on a 14-day cycle during grow-in and continues to this day.

II. Routine Cultural Practices

A. Mowing

The greens are mowed with a combination of John Deere 220A walk mowers and 2243 triplex mowers. Walk mowing is done exclusively from November through April. All mowers have Wiehle rollers on the front only. Tournament bed knives are used and replaced every three to four weeks. The reels are ground with a spin grinder with a relief grind.

The height of cut can vary from .130 to .090. This is based on the health of the turf and the time of the year. Since we do not overseed the greens, the HOC will be raised to .150 to increase the overall plant health. This will help the turf recuperate from the cooler temperatures and 250-plus rounds during our peak season.

B. Verticutting

We verticut with John Deere 2243 triplex mowers. The depth of the blades varies from 3/16 to 1/8 inch depending on what we want to accomplish. The standing verticut schedule is every 14 days but is not always needed. During the summer we have more flexibility with this procedure. By contacting our director of golf, we can alter the schedule to meet the needs of the grass. The use of a Mat-A-Way has been considered, but at this point, it does not seem to be necessary.

C. Topdressing

This may be considered the most important aspect of maintaining FloraDwarf. We topdress every two weeks with a Terra Topper. While the amount applied can vary from green to green, it is usually light enough that a couple of turns of the heads are all that's needed to work the sand into the turf. Now that the course is open for play, a straight sand is used for all topdressings. It appears the greens are creating enough organic matter through maturity that the addition of peat moss in the mix is no longer needed. No layering is evident in the green profile.

D. Fertility

We use a combination of granular, soluble and micro-nutrient fertilizers. Granular 17-1-10 or 13-2-13 is applied every six to seven weeks at .75 lbs of N/1,000 sq. ft. Two weeks after a granular application, we spray a soluble fertilizer at a rate of 1/8 lb. N and K/1,000 sq. ft. A week later 6 oz/1,000 sq. ft of Lesco's Iron Plus (12-0-0) will be applied. After this I will alternate complete soluble and micro-nutrient fertilizers weekly.

The granular products provide a good growth spurt to promote roots and increase recuperative potential. They can also reduce green speed, so we take tournament schedules and special events into consideration. Generally in this cycle, weeks four and five produce the best putting surfaces and appearance. The sixth and seventh weeks are very lean and the use of chelated iron maintains the color. This is when our green speeds are best (9.0 - 10.0) for the resort course. After a year of monitoring this program, I feel it provides the

best playing surface and has slowed down thatch development.

E. Aerification

The greens are aerified three times per year: April, June and July. This process is performed by a subcontractor, Golf Course Services. The aerifier is a modified Core Master with 1/2-inch hollow tines that penetrate to a depth of 3-4 inches. Spiking is used only when environmental conditions favor algae growth. With the intense topdressing and verticutting schedules, I have used spiking less than my past experiences with Tifdwarf.

F. Irrigation

Typically, our greens are watered 15-25 minutes daily. This decision is made daily based on using a soil probe to check moisture and monitoring the morning dew patterns. No hand watering has been necessary nor has the use of specialized wetting agents other than the Lesco Wet we put into our liquid fertilizer applications.

Summary

In summary, the FloraDwarf has been a learning experience in all aspects. From mowing heights so low that your bedknife becomes a bulldozer blade instead of a cutting edge, to implementing different fertility programs.

The cold tolerance seems to be similar to Tifdwarf with the purplish color. Diseases have been almost non-existent with the exception of some *Helminthosporium* last November and December.

The green speed issue is one for great debate, but FloraDwarf is easier to keep at 8.5-9.0 in relation to Tifdwarf without directly affecting the budget.

We have only managed FloraDwarf for a year, and so far it still appears to be a pure stand. I have seen some Tifdwarf greens less than two years old that show signs of mutation or contamination. Hopefully, our FloraDwarf will remain pure for many years to come.

JOHN LAMMRISH, CGCS
Director of Grounds Maintenance