



Operational Reports — Lessons learned from 2005

One of the best parts of the WTA EXPO last January was the discussion of winter injury recovery and golf turf management during the season of 2005. Rod Johnson, Mike Handrich, Gary Tanko and Pat Sisk made excellent presentations to an audience that was listening intently. They agreed to provide a summary of their remarks for *The Grass Roots*, and those reports follow.

Pine Hills Greens Management Programs 2005

By **Rod Johnson**, Golf Course Superintendent, Pine Hills Country Club

The following is a summary of a presentation given at the January 2006 WTA Expo. A large portion of the presentation was slides and charts with "off the cuff" remarks so I will attempt to summarize the presentation.

The thoughts of Wisconsin superintendents in early 2005 were on a thick ice accumulation that had been on courses since the first week in January. The potential for large areas of turf loss was high. Pine Hills shared those concerns with solid dense ice accumulations ranging from two to four inches in thickness. With those concerns in mind we went forward with a snow and ice removal program in early March. Rented and in house snow blowers were used to remove up to 12 inches of snow cover and Milorganite was used to darken the ice and take advantage of warm sunshine. All greens were cleared completely of all snow and ice over a five day period in the first week of March.



The physical removal of ice and snow accumulations is subject to debate. I don't know how big of a factor removal was, but turf damage to greens at Pine Hills was minimal with only small "dots" of *Poa Annua* affected. Our recovery program consisted of a "kick the dog" philosophy with an application of Andersons 14-0-29 with *Poa annua* control. With a fairly large percentage of bentgrasses I have found an early season application of a *Poa*-controlling growth regulator beneficial in further reduction of annual species. An application of 2.3 lbs of the product per M was made on May 2.

Greens at Pine Hills are mowed with four Toro 1000 mowers normally equipped with heavy cast grooved front rollers. The first mow of the 2005 season took place on April 7. From April 16-May 14 greens were mowed three times per week on a Tuesday, Thursday, and Saturday schedule. Between May 15 - October 22 greens were mowed daily. From October 25 - November 8 we were back on the 3 times per week schedule.



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Height of Cut

- ? First Mow - .170
(April 7)
- ? Mid May - .160
- ? Late May - .150
- ? June 16 - .140
- ? July 9 - .130
- ? July 11 - .115 (solid roller)
- ? July 19 - .140 (grooved roller w/daily rolling)
- ? Aug 20 - .135
- ? Sept 4 - .130

Starting on June 2 as seasonal labor became available greens were rolled on a three times per week basis, again Tuesday, Thursday, and Saturday. A Tru-Turf side-winder type roller was used. Starting on July 19 and continuing until September 22 entire greens were rolled on the three time per week schedule, and on alternating days the 30% of the green where the hole was located was rolled. This schedule resulted in a consistent day to day ball roll.

Greens at Pine Hills are historically aerified the first Monday of June. The following chart provides the details.

Greens Aerification – June 6th

- ✦ Soil Reliever @ 8" depth and spacing
- ✦ Followed with Toro Prococore 648 fitted with 3/8" solid quad tines @ 2" spacing and 2 1/2" depth
- ✦ Collars aerified with Toro Prococore 648 fitted with 5/8" hollow tines @ 2 1/2" spacing and 2" depth
- ✦ Sand applied @ 1.2 cu ft/M (180 cu ft or 9 tons used total)
- ✦ Drag once over with astroturf mat
- ✦ Vibrating roller twice over, two different directions
- ✦ Hand water heavily due to wilt and to wash sand down
- ✦ Greens syringed often during the day due to high temps and wind
- ✦ Time spent aerifying 20 greens (not including collars):
Soil Reliever – 8.5 hrs.; Toro Prococore – 9 hrs



Sand topdressing is applied on a light and frequent basis. Thirteen sand applications were made in 2005 with rates and annual totals of sand applied contained in chart form.

Sand Topdressing

Date	Amount per M	Total sand applied
Mon May 16	45 cu ft	60 cu ft
Mon May 23	45 cu ft	60 cu ft
Mon June 6 (greens aerification)	1.35 cu ft	180 cu ft
Mon June 13	45 cu ft	60 cu ft
Fri July 1	45 cu ft	60 cu ft
Mon July 11	45 cu ft	60 cu ft
Mon July 18	90 cu ft	120 cu ft
Mon July 25	90 cu ft	120 cu ft
Mon Aug 15	45 cu ft	60 cu ft
Mon Aug 29	45 cu ft	60 cu ft
Mon Sept 12	45 cu ft	60 cu ft
Mon Oct 3	45 cu ft	60 cu ft
Tues Nov 29	90 cu ft	120 cu ft
TOTAL	8.1 cu ft/M/yr	1080 cu ft 40 cu yds 54 tons

Growth regulators are a major component of the greens management program at Pine Hills. I have chosen to use Primo on a regular basis to improve turf

Primo Applications

Date	Amount per M
Tues May 17	10 oz
Fri May 27	10 oz
Fri June 17	16 oz
Fri June 24	13 oz
Tues July 12	20 oz
Mon July 18	20 oz
Tues July 26	15 oz
Wed Aug 3	20 oz
Fri Aug 12	20 oz
Fri Aug 26	23 oz
Wed Sept 7	20 oz
Tues Sept 20	20 oz
12 Total Apps	2.07 oz/M/year

density and uniformity, reduce clippings, and for consistent, day-long ball roll. I have found it necessary to adjust rates and application intervals throughout the year to achieve expected results.

When superintendents speak of greens fertilization we mostly speak of nitrogen or how little of it we apply. The greens fertilization program at Pine Hills mirrors many with some granular feeding in fall and spring and spoon feeding during the growing season. Just over two lbs of N were applied in 2005.

Fertilizer Applications

Date	Fertilizer	Amount per M	Amount N per M
Nov-04	Milorg, Greens Grade	10 lbs	6 lbs
Mon May 2	Anderson's 14-0-29 w/ Poa Control	2.3 lbs	3 lbs
Sprayer Apps			
Tues May 17	Lesco 28-7-14 UMaxx 47-0-0 Lesco iron 12-0-0	15 lbs 30 lbs 1.80 oz	05 lbs 15 lbs
Fri May 27	Lesco 28-7-14 UMaxx 47-0-0 Lesco iron 12-0-0	15 lbs 30 lbs 1.80 oz	05 lbs 15 lbs
Fri June 3	UMaxx 47-0-0	35 lbs	16 lbs
Mon June 13	UMaxx 47-0-0	3 lbs	15 lbs
Tues July 5	UMaxx 47-0-0	3 lbs	15 lbs
Wed Sept 7	UMaxx 47-0-0	3 lbs	15 lbs
Tues Sept 20	UMaxx 47-0-0	3 lbs	15 lbs
TOTAL			2.06 lbs/M/year

The Aquatrols product Revolution was the wetting agent of choice in 2005. Label recommended rates of 6 oz per were applied on April 19, June 13, July 5, and August 1.

It is a near given that at the heart of every greens management program is well thought out preventative fungicide application program. The following monthly charts detail dates and rates for 2005 at Pine Hills.

May/June Fungicide Apps

Date	Pesticide	Amount per M
Tues May 17	Proxy Daconil Ultrex	4.50 oz 1.80 oz
Fri May 27	Chipco 26GT	2.20 oz
Fri June 3	Insignia	1.08 oz
Mon June 13 & Fri June 24	Fore 80 WP Chipco Signature Daconil Ultrex	4.20 oz 2.90 oz 1.80 oz

July Fungicide Apps

Date	Pesticide	Amount per M
Tues July 5	Insignia Daconil Ultrex	.90 oz 1.80 oz
Tues July 12	Fore 80 WP Chipco Signature Daconil Ultrex Wisdom TC Flowable (Talstar GC)	4.40 oz 3.00 oz 1.80 oz 1.85 oz
Tues July 18	Daconil Ultrex	1.80 oz
Tues July 26	Fore 80 WP Daconil Ultrex	2.20 oz 1.80 oz

August Fungicide Apps

Date	Pesticide	Amount per M
Wed Aug 3	Chipco Signature Daconil Ultrex Wisdom TC Flowable	3.00 oz 1.80 oz .55 oz
Fri Aug 12	Chipco Signature Daconil Ultrex	3.00 oz 1.80 oz
Wed Aug 17 (Only #3 Green - For Leaf Spot - Bipolaris Sorokiniana)	Insignia Quali-Pro DF	.90 oz 1.80 oz
Fri Aug 26	Fore 80 WP Chipco 26GT	2.20 oz 2.95 oz

September Fungicide Apps

Date	Pesticide	Amount per M
Wed Sept 7	Daconil Ultrex	1.80 oz
Fri Sept 16 (Only #13 Green - For Leaf Spot - Bipolaris Sorokiniana)	Daconil Ultrex Insignia Chipco 26GT	1.80 oz .90 oz 2.45 oz
Tues Sept 20	Daconil Ultrex Fore 80 WP Chipco 26GT	1.80 oz 4.30 oz 2.90 oz

Oct/Nov Fungicide Apps

Date	Pesticide	Amount per M
Mon Oct 10	Insignia Fore 80 WP Quali-Pro DF	.85 oz 4.40 oz 1.80 oz
Tues Nov 8	Daconil Weatherstik Chipco 26GT Insignia	3.50 oz 3.50 oz .85 oz
Wed Nov 30	Daconil Weatherstik Chipco 26GT	3.50 oz 3.50 oz