

Recipe for Rapid Recovery from Winter Injury

What to do if you have only 40 days to get the course ready for a championship.

by EARL SHAFER, KEITH SNYDER, and STANLEY ZONTEK

EACH YEAR, the DuPont Country Club plays host to the McDonald's LPGA Championship, one of the four major events on the LPGA Tour. The prize money is more than \$2 million, and the event raises \$2 million each year to support McDonald's children's charities. Most notable are the Ronald McDonald Houses. Also, the tournament is nationally and internationally televised on CBS, the Golf Channel, and Tokyo Broadcasting.

Earl Shafer is the Superintendent of Grounds and Keith Snyder is the Superintendent of the DuPont Course, where the tournament takes place.

It goes without saying, the event is also a showcase for the DuPont Company and its three golf courses. It is an important event for all concerned.

As Superintendent of Grounds, I have the responsibility for these courses and all the events associated with them. Thus, during the winter of 1993-94,

when an extended period of snow and ice cover occurred, I began to worry. The LPGA Championship was scheduled for the second week in May. By late March, when the ice and snow finally cleared, our worst fears were realized. Much of the turf on seven greens was 80-95 percent dead, two greens were 70 percent dead, three greens were 60 percent dead, and all but one of the remaining greens had lesser amounts of winterkill. Virtually

The before and after photos of the par-3 17th hole at DuPont Country Club (Wilmington, Delaware) bear witness to the amount of work that went into renovating the damage from winter injury.



all of the damage was to *Poa annua*. With the LPGA Championship only 40 days away, we had our work cut out for us. With this background, here's the story of how we quickly brought these greens back from the dead.

The *first step* in any recovery program is to convince yourself that the grass is dead. After all, winter injury associated with ice sheet cover and crown hydration can be deceiving. Roots can look white and healthy. The grass even retains some amount of green color coming out of winter, and many golf course superintendents believe the grass will come back. They think it just can't be hurt that badly. After the first few warm days, however, damaged plants attempt to function but soon wilt and begin to decay.

After consulting with our regional USGA agronomists, Stan Zontek and Keith Happ, any optimism we had was dashed. Soon the odor of the grass (it smelled like rotten grass clippings) and the changing of the grass's color each day, from shades of green to yellow-green to tan, more than convinced us that a recovery program must be started, and quickly. Our fears were

communicated to our management and the LPGA. We felt that if we did not disrupt the surface of the greens too much with the renovation process, we probably could provide a satisfactory surface for the event, even though the turf cover might be thin. Obviously, we wanted grass but we prepared for the worst.

The *second step* of our recipe was seedbed preparation. To accomplish this, we used a combination of spiking, shallow aeration (using the Job Saver attachment on a Ryan Greensaire unit), and topdressing. Greens were spiked four ways and seeded in one direction at 2 lbs./1,000 sq. ft with Redi-seed mix, which is primed seed Pennncross. Two pounds of this product equates to one pound of actual seed.

The seedbed preparation continued with shallow aeration with the Job Saver. The greens were seeded again in a cross direction, at the same rate, and were lightly topdressed with an 80 percent sand/20 percent organic matter material at 1 cu. yd. per green. All of this was dragged in and then rolled with a Salsco roller. A few days later, the greens were spiked again and

seeded at 2 lbs./1,000 sq. ft. with unprimed Dominant bentgrass.

As you can see, we used a combination of primed and unprimed seed. Primed seed was new to us. It's a new technology that is supposed to allow for seed to germinate at soil temperatures where conventional seed might not germinate and could rot. We hedged our bets by using both primed and unprimed seed.

Step three was to effect germination during a cool, cloudy, and damp spring. These were not good conditions for obtaining quick germination and growth. Our strategy was to use covers. The first was clear 4-mil plastic, and we used 150,000 sq. ft. of it! This cover quickly raised the soil temperature by 7-10 degrees. In seven days we saw the first signs of germination, and at that time we removed the plastic and switched to geo-textile fabrics. This material breathes better than plastic, and we covered the greens each night to conserve heat and protect the seedlings from frost.

Step four was labor intensive, involving the daily removal of these geo-textile covers. Each day they were re-



moved in the morning and replaced in the late afternoon. Our labor expenditure for this operation was 40 man-hours per day.

Step five was the post-germination grow-in recipe:

4/2/94: Sprayed greens: Chipco 26019, 4 ozs./M.

4/14/94: Sprayed greens: Chipco 26019, 4 ozs./M; 0.2 lb. N/M Par-Ex 20-20-20 and 2 ozs./M Ferramec.

4/15/94: Spot seeded thin areas with Redi-seed. Topdressed greens twice with Lesco hand cyclone spreaders, set wide open. Fertilized greens: 0.5 lb. N/M Milorganite.

4/17/94: Top-dressed greens twice over with Lesco spreaders.

4/19/94: Sprayed greens: Astron 1 oz./M (Astron is a growth stimulant).

4/20/94: Sprayed greens: .2 lb. N/M Par-Ex 20-20-20.

4/21/94: Fertilized greens: .5 lb. N/M Pro-Lawn 14-22-14. We saw a phosphorus response.

4/22/94: Sprayed greens: .2 lb. N/M urea 46-0-0. The seedlings were not responding to the 20-20-20 material, so we switched to a more available nitrogen source. This quickly accelerated the growth of the new seedlings.

4/23/94: Sprayed greens: .1 lb. N/M urea, 2 ozs./M Ferramec. Spot seeded Redi-seed mix before topdressing. Topdress greens twice over with Lesco spreaders.

4/24/94: Sprayed greens: .1 lb. N/M urea, 4 ozs./M Daconil, 2 ozs./M Fore, and 1 oz./M Roots plus iron.

4/25/94: Sprayed greens: .1 lb. N/M ammonium nitrate.

4/26/94: Sprayed greens: .1 lb. N/M ammonium nitrate and 2 ozs./M Fore. Applied Redi-seed on thin areas before topdressing. Topdressed greens twice over with Lesco spreaders.

4/27/94: Sprayed greens: .1 lb. N/M ammonium nitrate and 2 ozs./M Fore.

4/28/94: Sprayed greens: .1 lb. N/M ammonium nitrate and 2 ozs./M Fore.

4/29/94: Sprayed greens: .1 lb. N/M ammonium nitrate and 1 oz./M Roots.

All spraying was done with the Toro Workman boom sprayer, with raindrop nozzles. We felt that with so many young seedlings, we had to be careful about fertilizer burn. These light, frequent sprays worked just fine. The grass was dark green and growing rapidly.

This work took us to the beginning of *advance week* before the tournament. The greens were completely covered with turf; we had brought the greens from dead thatch to living grass in 40 days. The greens continued to

stemmy due to the heavy fertilization schedule. We felt we had to cut some of these runners with the tournament less than two weeks away. I am not sure I would have risked it under normal conditions, but we still had to prepare a putting surface for a major golf event and for normal member play after the tournament. It was carefully done; we set the groomers/verticutters only $\frac{1}{64}$ -inch deep.

We also were careful with our topdressing applications. With tender grass, we very lightly brushed in the topdressing and then watered afterwards.

Step seven was traffic control. During this grown-in and recovery period, the greens were not in play. *We strongly feel this was a key to our success.* The course was open for play, but temporary greens were used.

The before and after photographs perhaps tell our story better than our written words. In less than six weeks we went from dead grass to greens that rolled 9'6" to 10' on the Stimpmeter. I feel our recipe worked to perfection under these circumstances.

Recovery from this type of devastation took a true team effort. It required a lot of understanding

and cooperation from our management and members, along with a tremendous amount of hard work by our staff. It should be stressed that a maximum effort was put forth. We did not have the luxury of time. We needed to use all tools available to effect this recovery. If extensive winterkill ever occurs on your course, I hope these details of our experience help you produce a timely recovery.

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The Job Saver tines helped produce a good seedbed without disrupting the surface.

improve daily, and by the start of the championship on May 9, 1994, a very satisfactory playing surface was provided for the players.

Step six was management. Initially, we lightly syringed, sometimes hourly, to maintain moisture on the surface of the soil where the seed and seedlings were. The surface was never allowed to dry out. When the grass was tall enough to mow, we mowed the greens with a triplex mower set at $\frac{1}{4}$ -inch, using solid rollers. We mowed every two to three days.

The grass on the greens even required some light grooming. The reason for this was that the bentgrass in our greens that had survived the winter became coarse-bladed and