Practical Pregermination

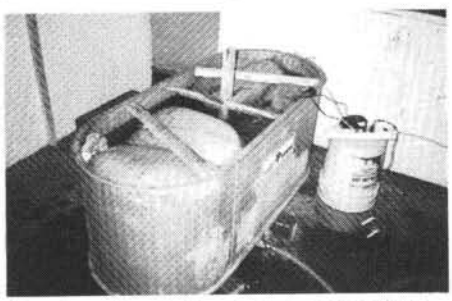
by Rod Johnson

This past winter's harsh weather and prolonged periods of ice cover have led to a great deal of concern for Wisconsin superintendents. With the arrival of spring it is now time to take inventory of our losses and to lay plans to insure the fastest possible recovery.

Experience continues to be an excellent teacher. The winter of 1987-1988 provided many similar circumstances at my locale with a resulting loss of seven plus acres of *Poa annua* fairway turf. The returfing of large areas is always a major headache, but doing it under less than optimum conditions is double jeopardy.

Winter damage, whether it's from extended ice cover, crown hydration, desiccation or other forces of nature, can cause a real dilemma. There are numerous frustrations and inherent problems. Recovery never seems fast enough for overly anxious golfers waiting to flex their golf muscles and to test their newfound "*Golf Digest Swings.*"

Seeding of new grass seems logical, but cold spring temperatures usually limit success. Soils at a two-inch depth must warm to temperatures of at least 60°F to be capable of germinating bentgrass seed. It could be mid-June in many areas of Wisconsin before soil temperatures reach this level. Waiting that long to seed would be unsatisfactory and I doubt new seedlings started in June would be able to survive the coming summer's stress. A June seeding would also probably be a wasted effort due to the competition from a fresh croup of *Poa annua* or possibly from common turfgrass weeds.



Seed soaking in livestock watering tank.

Faced with a large scale turf loss and willing to try anything short of sodding seven acres (the $52,000 price tag would have been tough to sell), I decided to try the pregermination of bentgrass seed. Like most of us, I had tried pregermination on a limited basis with a reasonable success level. The pregermination of 350 pounds of bentgrass seed presented a physical challenge as well as a mental stress. The cost of the limited availability of bentgrass seed leads to a great deal of anguish.

Having gathered information from numerous experts, a Cushman load of Penncross seed was readied for action. Penncross was the grass of choice due to its known aggressive growth characteristics with hopes of its future competitive abilities. Ryegrass, known for its fast establishment, was ruled out because of past failures and a questionable ability to survive future winters.

Mark Grundman, Field Representative for Northrup King, provided a great deal of the expertise for the project. His research and experience showed that to achieve maximum results several specific steps needed to be taken. Seed was to be fully

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submerged in water that was kept at a constant 75 °F for a period of five days. Further, the water had to be changed every 12 hours and seed bags hung to allow complete water drainage and water change. His past experience also showed the best results from using water under continuous aeration.

These steps seemed simple enough on a small scale, but the space requirements of 350 pounds of bentgrass seed presented the physical challenge. After a great deal of thought and quite a bit of experimentation, we arrived at our equipment needs.

Bags of seed too heavy to lift being winched from tank.

A small heated section of our shop basement was sectioned off to be used as our nursery area. A 110 gallon livestock watering tank proved to be just the right size vessel to allow for the submersion of the seed. A hose bib was added to the bottom of the tank to facilitate the previously mentioned water changes. The seed was hung for drain down on the twelve hour intervals with the much needed aid of a ceiling mounted winch.

Some relatively inexpensive equipment was purchased from a local pet store to meet the temperature and aeration requirements. Two 300 watt aquarium heaters were purchased. These heaters were submergeable and were capable of keeping the water at the desired 75 °F. Water already warmed was added to the tank at each change as these heaters were capable of holding the constant temperatures but could not be used as water heaters. An aquarium pump and two 12-inch airstones were also purchased to facilitate aeration and water movement.

Seed was transferred from its original poly lined bags into canvas bags capable of allowing water to pass through but holding the tiny bentgrass seeds in. Seed was pre-weighted and separated into bags containing the proper amount for each fairway to be reseeded. This was done due to the fact that weighing wet seed for a proper seed rate would have been impossible.

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Assistant Golf Course Supervisor

Semi-skilled, skilled and supervisory duties in the maintenance of a nine-hole par 3 golf course at Weber Park, Skokie, IL. Golf course maintenance skills and experience required. College graduate preferred. Salary range $16,000 to $18,000 plus fringe benefits. Skokie Park District is an Equal Opportunity Employer. Contact:

John V. Ohrlund, Manager of Park Services, Skokie Park District, 4400 Grove Street, Skokie, IL 60067 (312) 674-1507.

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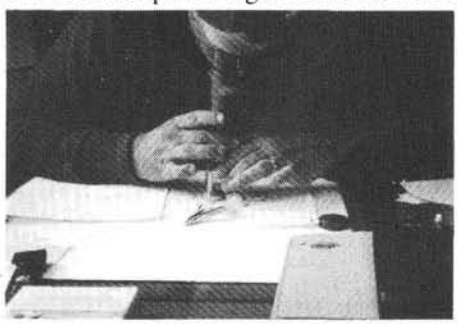
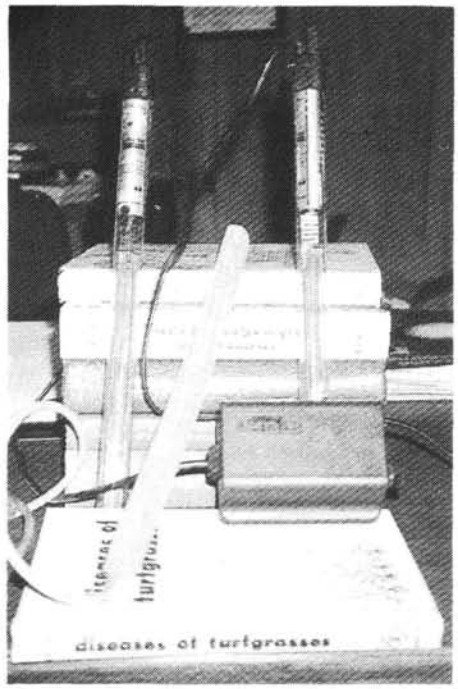
The soaking seed was monitored closely to be sure that water temperatures remained at the constant 75°F. Starting on the fourth day seed samples were removed from the bags at each water change. Samples were scrutinized with the aid of Scotts 8 x 30 power macroscope for signs of radicle emergence. In



Monitoring for Radicle Emergence.

seed germination, the radicle is always the first actively growing part to emerge. True to form, radicle emergence was first noted on the fifth day. This is the point when the pregerminated seed is ready to be planted and also, I suspect, the point when the potential for failure is greatest. Seed which has developed beyond this point is extremely fragile. Overdeveloped or overgerminated seed could be desiccated during the planting operation. There is also the thought that overdeveloped seed could quickly succumb to nutrient deficiency because of a lack of phosphorous.

With these thoughts in mind, it is important to anticipate the five day pregermination period and to have your seedbed prepared accordingly.



Aquarium heaters and aeration pump.

The methods we used to prepare our seedbed are not a mystery and have been employed by numerous superintendents. The affected fairways were thoroughly aerified and the cores were dragged for a topdressing. Grooves were then cut using a Rogers AeroBlade three point hitch seeder. One variance from normal was that the seed was not loaded into this machine and cut into

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the grooves but was broadcast over the area later with a Vicon Spreader. This was done to ensure a more accurate calibration and to more evenly distribute the seed between the grooves and the aerifier holes.

The wet seed, ready for planting, was dumped on a cement floor for drainage and mixed with Milorganite for further drying. The Milorganite also acted as a seed carrier further aiding in the broadcasting of the correct seeding rate. Milorganite was added on a 4-to-1 basis, four pounds of Milorganite to one pound of seed, with the use of an electric cement mixer to ensure a homogeneous mix.

The broadcast seed mixture was dragged with a harrow mat and rolled to enhance seed to soil contact. A high quality starter fertilizer was then applied and the all important irrigation water was started. As with any seeding, the seedbed must be kept moist and watering schedules adjusted accordingly.

Our results were outstanding. Bentgrass plants were identified in a two leaf stage 10 days after seeding, even with soil temperatures of much less than 60°F. Fairways which had been seeded on April 26th healed quickly and were opened for regular membership play one month later. A reasonably mature stand of turf allowed not only good playing conditions but unrestricted golf car movement on Memorial Day weekend.

The efforts of pregerminating on a large scale were well worth the results and would be worthy of your consideration should you be forced with recovering from water damage.

Credit: "The Grass Roots", Vol. XVI, No. 3

(Looking for Poa cont'd.)

5) LEAF SHININESS. POA ANNUA leaves are somewhat shiny. BENTGRASS leaves tend to be somewhat duller in appearance and you may notice a "dusty" look to the top side of the leaf.

6) STOLENS. Stolens are unlikely on POA ANNUA plants growing at greens mowing heights. Spreading occurs through short, near the surface connections which soon rot off leaving each crown as a separate plant throughout most of the year. BENTGRASS plants will usually sprout stolens and spread by this means across the surface of a green.

7) TILLERS PER CROWN. From late spring throughout summer, POA ANNUA plants appear as groups of similar independent tillers growing together in a relatively roundish configuration. During early spring and fall you may find two or more crowns still connected together. However, the connections soon rot off leaving each crowns and tiller independent of the others. Some plants spread more rapidly than do others but not as rapidly as do bent plants. BENTGRASS plants usually will have several tillers growing from a single crown throughout the year.

8) SEED HEADS. POA ANNUA plants may or may not have seed heads showing. Many plants bloom most of the spring and into the summer. Others produce seed heads for a short time and may bloom only once during the season. A few will not send up seed heads when mowed at greens height. BENTGRASS does not produce seed heads on greens.

Credit: Northern Michigan Turf Times, Vol. 18, #5