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### **New Short Game Complex at North Shore**

(continued from page 20)

Hard (Black) rock phosphate (phosphate ore): 4% available phosphoric acid, 30% total phosphoric acid. Typical analysis dry: Bone phosphate of lime (BPL), 66.6%. Phosphate as P<sub>2</sub>O<sub>5</sub>, 30%. Calcium as CaO, 48.7%. Iron, .6%. Aluminum, .4%. Floride, 3.6%. Magnesium, .6%. Carbon, 3%. Sodium, 1%. Sulfur, 1.2%. CaO/P<sub>2</sub>O<sub>5</sub> ratio, 1.6.

Greensand: Greensand is a marine potash with silica, iron oxide, magnesia, lime, phosphoric acid, 22 trace minerals, Espoma Greens and (0-0-0.1) soluble potash. Greensand is derived from natural deposits of glauconite of marine origin, composed primarily of iron-potassium silicate.

15. 90/10 Feltes Sand and Yardwaste Compost by Greencycle

Characteristics of compost are: 42.6% moisture, 50% total organic matter, 28.5% humus, 50% ash at 750° centigrade, pH 7.0, electrical conductivity of 6.4 mmhos/cm, total exchange capacity 49.79 meq/100 g, soluble sulfur 147 ppm, easily extractable phosphorus 603 ppm, calcium 5033 ppm, magnesium 1276 ppm, potassium 4329 ppm, sodium 162 ppm. Carbon/nitrogen ratio 15.01/1. Microbiological analysis available.

- 16. 90/10 Feltes Sand and Biosolid by Metropolitan Water Reclamation District of Greater Chicago Characteristics of biosolid are 27.10% humus, pH 7.4, total exchange capacity 36.92 meq/100g, soluble sulfur 1937 ppm, easily extractable phosphorus 2327 ppm, calcium 3465 ppm, magnesium 1669 ppm, potassium 855 ppm, sodium 466 ppm. Microbiological analysis available.
- 17. 90/5/5 Feltes Sand and Yardwaste Compost and Biosolids
- 18. Feltes Sand and Hydrozone (10 lbs.)

  Hydrozone is a water-absorbing polyacrylamide copolymer with cation exchange capacity that absorbs 35 to 60 times its weight in water. Hydrozone is a permanent soil amendment.
- 19. Feltes Sand and Hydrozone (5 lbs.)
- 20. 90/10 Lakeshore Sand and Frenzer's Local Peat/Humus

This is the only cell utilizing a different sand for

rootzone construction. Lakeshore dunes sand is subangular, medium spherically shaped. Sand size distribution is slightly fine, testing 1.0% very fine, 31.3% fine, 60.1% medium, 3.1% coarse, 0.3% very coarse, and 0.1% gravel. Frenzer peat/humus is 25.5% ash at 700° centigrade, 74.5% total organic matter and 57.9% moisture, 6.9 pH, electrical conductivity of 1.6 mmhos/cm.

## Early Evaluation of Amended Rootzone Plots

Amended rootzone plots were seeded on September 13, 1998. These plots were rated 14 days after seeding. Results are shown below as a percentage of cover. The blend of L-93 and SR-1119 covered quickly and shows good vigor.

## Table 4 Percent cover of amended rootzone plots seeded with creeping bentgrass.

Rootzone	Percent Cover 9/27/98	Rootzone	Percent Cover 9/27/98
1	10	11	70
2	30	12	30
3	30	13	30
4	90	14	90
5	40	15	100
6	40	16	60
7	40	17	100
8	30	18	20
9	30	19	10
10	50	20	80

### **Subair System**

The putting green was designed and built with four distinct gentle slopes. This configuration allows better acceptance of approach shots from four different areas around the green. These contours also provide four distinct surface and subsurface drainage patterns. Two separate subsurface drainage systems were installed. One system drains a single quadrant of approximately 1,500 sq. ft. The companion system which drains the remaining area of the green was designed to accommodate the SubAir system. A continuous permanent barrier of 45 mil polypropylene was installed to separate these drainage fields. This barrier extends from the clay base of the green to the surface of the green. This separation allows for the study of the impacts of forced gas exchange by Sub-Air through the drainage system of the putting green.

The SubAir operates in either vacuum or pressure mode, pulling or pushing atmospheric air (continued on page 24)

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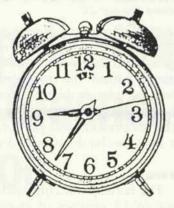
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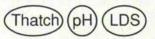
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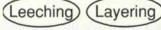
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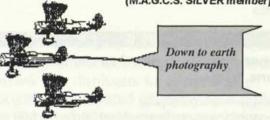
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#### **New Short Game Complex at North Shore**

(continued from page 22)

through the rootzone. Excess water, carbon dioxide, methane, hydrogen sulfide, and other gasses can be purged. Increased concentrations of oxygen can be obtained within the rootzone to encourage the growth of microbial populations, and assist in gas exchange with plant roots. The effect of air exchange on the temperature and gas concentration in the verdure may also be documented.

#### **Fairway**

The fairway was constructed to test the performance of 13 varieties of creeping bentgrass and 6 different rootzone amendments. Plots were randomly selected and are 5 feet x 5 feet, including three replications. All varieties (Table 4) were seeded at 25 grams per plot, or 2.2 lbs./1000 sq. ft.

Six plots were established to test rootzone amendments (Table 5). Each plot was approximately 2,300 square feet Amendments were applied to native soil and disked into the top 4 to 6 inches. A 50/50 blend of L-93/SR-1119 was seeded at 2 lbs./1000 sq. ft.

#### Table 5

### Bentgrass varieties for evaluation at fairway height.

Cobra	Penntrio
Dominant	Regent
Highland	Seaside II
L-93	South Shore
Mariner	SR-1019
Penncross	SR-1020
D I' . I	

Pennlinks

#### Table 6

## Soil amendments applied to six fairway rootzone trials.

1. 3-in. yardwaste compost

 3-in. yardwaste compost plus 100 lbs./1000 sq. ft. paramagnetic rock

3. 2 in. biosolids

- 2 in. biosolids plus 100 lbs./1000 sq. ft. paramagnetic rock
- 5. 3 in. yardwaste compost plus 2 in. biosolids
- 3 in. yardwaste compost plus 2 in. biosolids plus 100 lbs./1000 sq. ft. paramagnetic rock

Note: A 3 in. application equates to approximately 390 cu. yds. of material per acre.

In addition to bentgrass varieties, a bluegrass blend (Table 6) is being evaluated for use on green surrounds. Evaluation will include turfgrass quality, low mowing (one inch) tolerance, color, disease resistance, wear tolerance, and recuperative ability. The blend was sown at 1.5 lbs./1000 sq. ft.

#### Table 7

## Composition of bluegrass blend utilized for green surrounds.

14.84% Limousine	13.89% Award
14.71% Eclipse	13.88% Nuglade
13.90% Alpine	13.84% Rugby-II

13.76% America

#### Acknowledgments

Planning and constructing this green with all the trials was an extensive undertaking, demanding many hours of work and forethought. Sincere appreciation is given to those who assisted. Special thanks to Rick Feltes from Feltes Sand & Gravel Co., Elburn, Illinois. (630-365-9181) who gave freely the off-site custom mixing of the different rootzone amendments; to Van Salmans, green chairman, and to the membership of North Shore Country Club; the USGA, GCSAA, and NTEP; Dr. Hank Wilkinson and Dr. Tom Voigt, University of Illinois; Dr. Randy Kane, CDGA; Dan Salsinger, GSI; Vick Koelper, Koelper Golf Course Construction; Rick Jacobson, Jacobson Golf Course Design; Bill Middleton, Emerald Isle, Ltd.; Mr. and Mrs. Repenning, GreenCycle; Richard D. Andrews and James W. Shaw, Zeoponix; Dr. Lea Brilman, Seed Research; Dr. Tom Granato, Metropolitan Water Reclamation District of Greater Chicago; Paul Vermeulen, USGA; Steve McWilliams, Turf Diagnostics & Design; Douglas Murray, Murray Pest Management; Bob Womack, WMC Products, Inc.; Dr. Paul Rieke, Michigan State University; Lou Haines, Soils Management; Gary Schinderle, Golf Enviro Systems, Inc.; Paul Tabor, Sportsturf Consultants; Rich Brandel, Organica, Inc.; Axis; Donald Michaels, Conserv FS; Tony Altumn and Jim Reed, Altumn Irrigation Design; and John Leibold, Leibold Irrigation.

Lastly, I would like to acknowledge the grounds crew at North Shore Country Club for their hard work and attention to detail, Jerry Dinelli for helping with the green and ensuring the golf course wasn't ignored, giving me the freedom to do research for the green, and Darrick Robbins for editing this paper.

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## Understanding and Treating Localized Dry Spot and Fairy Ring

Dr. Houston Couch VPI State University, as transcribed by Steve Davis

The following article represents proceedings from the recent AgrEvo First Program Conference Call Series, March 16, 1998, sponsored by Steve D. Davis, Midwest representative for AgrEvo USA. For more information on the subject contact Steve Davis at 800-441-6138, ext. 1102, or Dr. Houston Couch.

urfgrass managers, especially golf course superintendents, face the increasing intensity of localized dry spot and associated fairy ring causing quality problems on both greens, tees and fairway turf. Many of these problems in the past were presented as different pathogens and varying management concerns. As with D. Mildew and Yellow Tuft, they were thought to be different pathogens, but, in fact, turned out later to be similar pathogens. Fairy Ring and Localized Dry Spot are in much the same situation: thought once to be different but may be the same and caused by the same or similar fungi.

Fairy Ring can be put into two specific categories, Edaphic Fairy Ring, which can occur to a depth of 3 feet in the soil profile and is most often solved by masking or fumigation of the problem area, and Lectophylic Fairy Ring, which is a term used to describe thatch-loving fungi often associated with the term "False Fairy Ring." False Fairy Ring is like saying this is a false telephone. The term is misleading; and, therefore, the term "Lectophylic" was given to provide a proper explanation of where the fungi are located.

Edaphic Fairy Ring has three types: type 1 where turfgrass is killed or damaged, type 2 where the turfgrass is stimulated, and type 3 where mushrooms are often present. All of these types occur in the soil to varying depths, can occur on any area of the course and may come and go at will.

Fairy Ring
and
Localized Dry Spot
thought once to be
different but
may be the same
and caused by
the same or
similar fungi.

Lectophylic Fairy Ring, as discussed before, is a thatch or mat area condition and is described as three specific types: type A describes associated fungi with mushrooms and little or no affect on turf, type B where turfgrass shows symptoms of stress and type C where turfgrass shows severe injury or loss of turf. Both types, Edaphic and Lectophylic, cause exudates that cause waterproofing of the soil and associated turf stress or loss.

In comparing both Edaphic and Lectophylic and Localized Dry Spot, we can see the association of each with one another.

Once thought to be different problems, in most cases, they are, in fact, one in the same!

Localized Dry Spot is easy to see with well-irrigated turf with areas of drought-stress turfgrass and accompanying dry soil. Many times the soil when pulled in a soil sampler will just fall apart. One superintendent just prior to a meeting easily saw this problem on the subject when he watered the green for two hours, and many of the LDS areas were still dry and appeared to have had no water, thus the waterproofing. We have more to learn on the subject, but it appears that the problem that can be solved with both chemical and cultivation treatments.

Basidiomycetous fungi are the focus; and, therefore, treatments need to get to the fungi regardless of depth in which they occur. It will be the method that makes the difference in control. Both Edaphic and Lectophylic can be controlled with Prostar 50WP at labeled rates of 6.0 oz. when associated with proper pretreatment and soil conditioning.

The following program is a step-by-step treatment that will eliminate the problem with one or two applications:

- 1. Aerify or spike the area to be treated.
- Apply a wetting agent at the manufacturer's labeled rate. Dr. Couch does not recommend any particular soil wetting agent.
- Irrigate the area to be treated with sufficient water to bring the rooting mixture to field capacity at a depth of 6 in.

(continued on page 28)



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### Understanding and Treating . . . (continued from page 26)

4. After 24 hours, apply Prostar 50 WP at the labeled rate for preventive (3.0 oz./1,000 sq. ft.) or curative (6.0 oz./1,000 sq. ft.) in a least 2 gal. of water per 1,000 sq. ft. of turf.

5. Before the leaves dry from the Prostar application (or when dew is present or foliage is previously wet from irrigation), irrigate the treated area with the equivalent of 1/4 to 1/2 in. of water.

- Keep the thatch moist for two weeks.
- 7. It is recommended that two applications be applied six weeks apart.

It must be stated that the key is the method both with Edaphic and Lectophylic Fairy Ring and associated Localized Dry Spot.

**Question:** Many are saying that wetting agents alone are solving the problem; can this be true? **Couch:** Using a wetting agent will, in many cases, eliminate the symptoms for short periods but will not control the associated fungi; and using only a wetting agent is much like taking aspirin for a major back problem. Why not go all the way: use the wetting agent and follow with Prostar.

**Question:** What are the major types of Fairy Ring around the world?

**Couch:** Edaphic occurs in the arid regions of the country, but Lectophylic can and does occur in all areas of the world. Most of the information we have is from Drew Smith of Canada.

Question: Does Lectophylic produce mushrooms?

**Couch:** No, not all the time. There are many forms of this fungi. It will grow on any organic matter.

**Question:** What amount of wetting agent would you recommend?

**Couch:** The labeled rate. Do not go over the labeled rate as many can cause phyto problems.

**Question:** Can Localized Dry Spot be sampled and fungi examined?

**Couch:** Many times the fungi may not be easily seen, but there are occasions where you can place a plug in a sealed plastic bag, place it in a cool place (not in direct sun), and fungi can be produced and seen.

**Question:** What does the fungi look like?

**Couch:** Most of the time the Basidiomycetous fungi will be white in color, but associated fungi not related might show up as green.

**Question:** What will it take to do a microscopic examination? **Couch:** Slide mounts will see fungi and clamp connections at 500x magnification.

**Question:** Does the fungi grow fast or slow?

Couch: In most cases, very

rapidly.

**Question:** What is the best way to tell what type of Fairy Ring fungi are present?

**Couch:** It must be grown out as there are more than 50 types of fungi that can be involved.

**Question:** Are we able to correct the problem with Edaphic types?

Couch: Yes, Prostar will do the job provided that you can get to the fungi. In many cases, superintendents and turfgrass managers are treating it with fungicide like Prostar and still have Localized Dry Spot or Fairy Ring problems. It is the procedure which counts (not that the fungicide will not do the job). Get the method correct, and it will work!

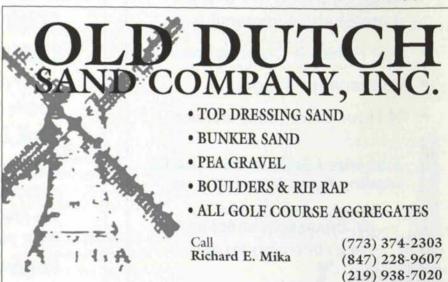
**Question:** Do organic materials or natural organic problems contribute to the problem?

**Couch:** If the materials used are from a mushroom compost or wood type product, they can contribute to the increase in fungi.

**Question:** Does it matter the time of year for treatments? **Couch:** No, as long as you can get and keep the soil wet; therefore, you may want to avoid high disease incidence times.

**Question:** Do the thatch control or biostimulant materials help?

(continued on page 36)





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#### Point of View . . .

(continued from page 10)

have all the different approaches that will allow a golfer to think before he swings. Phil breaks it down to the length of the hole: 440 yards, open; 365 yards, guarded; and 560 yards, a very large green.

#### **QUESTION 5**

Fairways: Has the switch from blue/ryegrasses to bentgrasses improved the game only for a few who can hit off bentgrass regularly?

Trey has a different perspective. He feels that by installing bentgrass, the club at a public course can raise their fees in accordance. If a golfer wants to pay top dollar, he wants a "private" course in the public sector. Economics has played a big part in changing the texture of the fairway. Phil believes that the poor player will benefit because the ball will roll farther, and the iron shot to the green from the fairway will hold due to back spin. Tony's answer was YES; end of statement.

## QUESTION 6 Superintendents: What would you like to see us do to better the game?

Tony suggests questioning your golfers what they are looking for, keep the golf courses challenging but not unfair, and too many courses are tough for the the average golfer with a 20 handicap to break 100. Phil adds that the greens are the most important part of a golf course, keep a good relationship with your club pro (makes the job easier), and a superintendent who plays his own course will have a better overall conditioned golf course. Trey feels that superintendents need to interact more with the public by either using bulletin boards, newslines, or one-on-one with customers. Trey also thinks that the program "Par for the Course"

is an excellent public relation tool for the public.

## QUESTION 7 What constitutes your signature hole from tee to green?

All three are in agreement: a hole that says AWESOME; a hole that has beauty, great landscaping with bushes, trees, and flowers; and has depth perception, elevation of tees, contours, and water hazards with fountains.

I would like to say thank you to these PGA professionals for taking their time to sit down and answer these questions. I hope some of these answers could help you in your day-to-day operation. Enjoy a round of golf with your local club PGA professional!

### Dan Anderson -N- Fox Valley G.C.

(continued from page 8)

(a golf league primarily of superintendents and suppliers), a position that he slyly passed onto myself. Thanks, Dan.

Dan and his wife Catherine will celebrate their ten-year wedding anniversary in September. They have two children, Alexandra who is seven and Matthew who is four. Dan also travels with Bruiser, a seven-vearshepherd, a Australian seemingly kind animal that you're never real sure about. Dan and Catherine are closing on their new home at the end of May, which they had constructed this past spring and look forward to inhabiting. Two weeks later, we will all be out on his course enjoying all of his efforts, as he is our gracious host for our June monthly meeting.

