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Green is Beautiful"

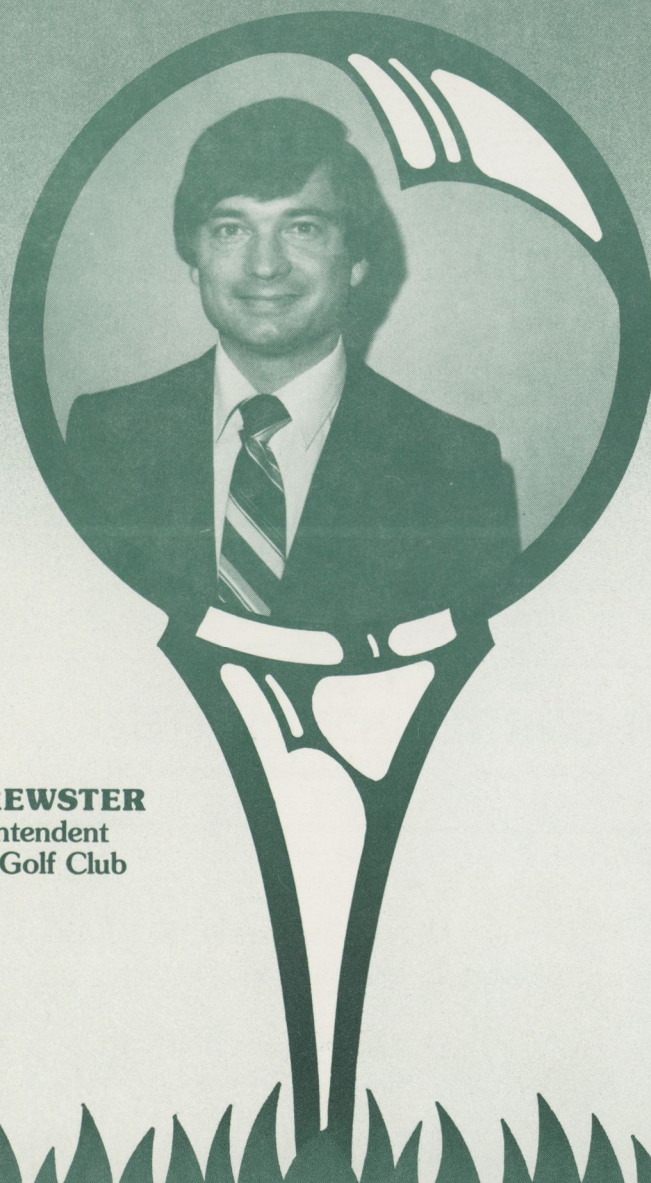
ario Golf Superintendents Association

312, ETOBICOKE, ONTARIO M9C 4V3

TELEPHONE 622-9929



JULY 1982



BOB BREWSTER
Superintendent
Weston Golf Club

Pro-Superintendent
Golf Tournament
Weston Golf Club
August 13, 1982
Shotgun at 1:00

Hosts: Bob Brewster and
Ken Quiggan

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NEWSLETTER CORRESPONDENTS

John Hutchinson

Bill Fach

Robert Kennedy

EVENTS' 82

Pro-Superintendent Day

August 13 — Weston Golf Club

By-Law and Regionalization Meeting
September 8 — Tyandaga Golf Club

McClumpha Tournament
October 4 — Aurora Golf Club

Monthly Meeting

October 15 — Oshawa Golf Club

Drainage Course

November 22-23 — Green Hills Golf Club

Annual Meeting

December 1 — Wyldewood Golf Club

Christmas Party

December 3 — Galt Country Club



New Members

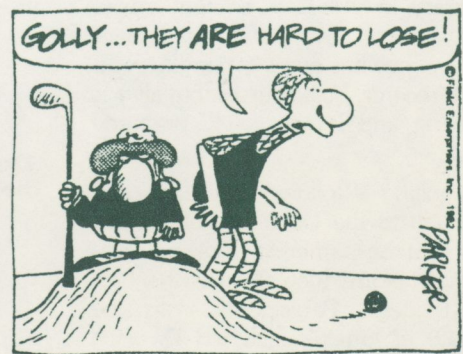
William Stevens	Class B - Lynn Meadows Golf & Country Club
Len Coward	Class B - Glen Lawrence Golf & Country Club
Wally Gibson	Class E - Royal Purple Garden Supplies
Ted Bouwhuis	Class A - Brockville Country Club
Ed Farnsworth	Class B - Deerhurst Golf Club
Wayne Hall	Class B - Confederation Country Club
Doug Woods	Class E - Douglas Wood Large Trees Sales Ltd.
R.W. Sheard	Class DD - Professor University of Guelph
Stephen Verrall	Class B - Cataraqui Country Club
Jim Honey	Class F - Warkworth Golf Course

Tidbits

Paul Dermott had two cornish hens and a rooster in a coup behind his maintenance building at the Oakdale Golf Club. Paul also has a rare breed of a dog he bought from Texas for several hundreds of dollars. One day someone left the latch off of the chicken coup. You guessed it. Now Paul has a Bird Dog!

Fred Currah, Superintendent at Kawartha in Peterborough, has bought a motel and is leaving the business. His assistant is finishing off the year. The club may hire a new Superintendent during the beginning of next year.

Cameron Cairncross, one time Super at the Summit and then with the Parks at Sault St. Marie, has moved to the Golden West. He is now with the Parks Department in Edmonton.

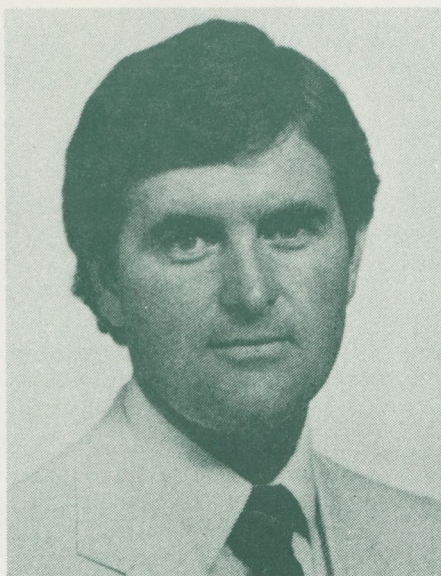


GALT FIELD DAY

by **Blake McMaster**
Ontario Director

On June 10th or thereabouts each year, more than one hundred Ontario golf superintendents leave their frustrations behind and escape to the Galt Field Day at the Galt Country Club.

Personally, the Galt Field Day is the highlight of the golf season for a number of reasons, the first being the host superintendent, Paul Scenna. Ever cheerful and positive (it's contagious) Paul is one of the delightful characters in our business. He has been very active and effective in association work - he's a past President of the O.G.S.A., and this past year was a member of the C.G.S.A. Convention Committee.



The Galt Country Club, which has hosted the Field Day for at least the past 10 years, and which celebrated its 75th anniversary in 1981, is a wonderfully, mature course, a perfect members' course, somewhat short in length compared to recently built courses, but always challenging and immaculately prepared by Paul.

The golfing is followed by lunch and then a visit to the University of Guelph Turf Plots at the Cambridge Research Station where Norm McCollum is the host Superintendent. Participants from the University of Guelph included Dr. Bob Sheard, Dr. Jack Eggens, Dr. Lee Burpee, Dr. Bob Hall, Dennis Muir and Andrea McTear.



Dr. Sheard Professor at the University of Guelph accepting a donation from Keith Nesbit, president of the OTRF, at the Galt Field Day.

For anyone with plans to construct a green or greens in the near future, Dr. Bob Sheard is doing some interesting work on a variety of sands used in greens construction. He is researching the moisture retention capacity, leaching and soil ph, in relation to nutrients available. Dr. Jack Eggens and C.M. Wright are doing work in fairway overseeding with Embark. As well, Dr. Eggens is doing a study on a soil conditioner produced from waste by the Ontario Ministry of the Environment. The results of the study are promising and indicate that the compost is suitable for high sand content root zones. Andrea McTear and Jack Eggens are researching the mechanism which enables Annual Bluegrass to dominate in intensively managed swards such as golf course fairways.

We hope to publish further results of all of these studies in the Greenmaster in the future. The work being done at Guelph and other Canadian universities is vital to all of us in the golf industry and deserves our support - financial.

Discussion among superintendents centred on the devastating effects of last winter on courses that have a predominance of poa. Toronto and area courses are just now recovering from the worst winter damage in the past two decades.

**Do you have a Turfgrass Disease
that you can't Identify or Control?
Call The Vargas Hotline.
(517) 355-5221**

Andy Bertoni from the Cleary Corporation was the after dinner speaker. As well as having been a golf superintendent and a strong supporter of our profession, Andy is one of the great humorous story tellers I have ever heard. I swear he didn't stop telling stories the entire day and never repeated himself.



Andy Bertoni and Bob Brewster
at Galt Field Day

Bill Bowen from the Peterborough Golf Club shot a 72 to take low gross honours. Keith Nisbitt from Westview Golf Club had the low net score, shooting 80 with a 16 handicap, for a net 64. John Cunningham, the Assistant to David Gourlay at Thornhill Country Club was low assistant shooting a very fine 72. Dennis Muir from the University of Guelph shot a 76.

To say the least, a great day! Compliments to Bob Brewster, OGSA President and his Board, and to Hugh Kirkpatrick who organized the event. ♪

Credit - Greenmaster
July/August 1982



Joe Vargas

A successful day at the London Hunt

by Gord Witteveen

Annually the Ontario Golf Superintendents Association organizes a Shotgun tournament consisting of 40 teams composed of a club's President, Greens Chairman and Golf Superintendent. This year the event was held at the beautiful London Hunt Club with its wide fairways and large greens. When the scores were tallied, the threesome for the Beaverdale Golf Club near Guelph came out as the winners. Second were London Hunt's John Bennett, Dave Stewart and Don

White. In third place were Bay of Quinte's Shorty Jenkins, A. Dahl and Ken Dodderidge.

This type of tournament provides an excellent opportunity for the club officials to meet each other and to discuss mutual problems. This year's after dinner address was given by Geoff Perkins, a former Greens Chairman and President of the Summit Golf Club. Perkins stressed the need for greater understanding on the

part of club officials for the greens Superintendents' problems.

Host Superintendent John Bennett had his golf course in excellent condition. The Hunt Club had a fully automatic Toro watering system installed last year. The fairways are watered with a double row method and the new sprinklers have made a big difference to the playability of the course, although Bennett has had his share of problems with the No. 670 heads. ♣



Hugh Kirkpatrick receives the President's Award for his contributions to the Golf Course Maintenance Industry.



Al Beeney (OTRF) receives a check for \$1,000 from Bob Brewster, President of the OGSA.



John Bennett, Superintendent at London Hunt Golf Club receives a plaque for hosting the President, Greens Chairman, Superintendent Golf Tournament on July 23.



The Beaverdale winners: John Salmon, Owner Superintendent Bob Labbett and John Hussey.

Toronto C-15 Syndrome

For many years, Toronto C-15 creeping bentgrass provided some of the finest putting surfaces on golf courses in the Midwest. However, for several years now, and with no specific pattern of occurrence, many Toronto C-15 greens have become thin, weak and in some cases failed to survive.

Last year was an especially difficult year for Toronto C-15 in the Chicago area. As a result, the Chicago District Association, the GCSAA and the USGA decided to sponsor jointly a research project to determine the reasons for this puzzling loss of Toronto bentgrass.

The project coordinator is renowned plant pathologist Dr. Houston B. Couch, of Virginia Polytechnic Institute. Work done by Dr. Couch and other scientists has apparently shown that this decline of grass is linked to Rickettsia or bacteria-like organism.

Because it is a bacteria-like organism, the typical fungicides simply did not work. It evolved that antibiotic chemicals were the only ones to offer any control. For that reason, all the fungicide treatments to infected turf in the Chicago area didn't work.

The USGA is pleased to be a part of this joint research effort. The research is ongoing, but for the first time since the disease destroyed so many greens in the Chicago area, there is solid evidence of what caused the problem.

It is hoped that this joint effort will provide a solution to this catastrophic problem so that healthy Toronto C-15 greens can once again be enjoyed throughout the Midwest. ♪

Credit - Greens
Section Newsletter Fall 1981

EPA Says, 2,4-D Not a Health Hazard

**Environmental Protection
Agency Weekly Report**

Based on preliminary analyses conducted on available data, the U.S. Environmental Protection Agency (EPA) believes that concentrations of dioxins found in U.S. produced 2,4-D products "do not appear to pose a significant health hazard," and no regulatory changes concerning 2,4-D uses or production in the U.S. are necessary at this time. Of 33 samples of 2,4-D technical grade acid, ester, and salt formulations examined, 30 were free of any dioxin contamination, and the most toxic isomer, 2,3,7,8 tetrachlorodibenzo-p-dioxin, was not detected in any sample. EPA intends to continue to monitor dioxin levels in U.S. manufactured 2,4-D products.

Credit - The Greener Side
April 1982

South Western Ontario Meeting

Green Hills Golf Club

Lambeth, Ontario

July 16

Forty people from the South Western area attended this meeting. Al Draper gave a talk on regionalization and a discussion followed. Gordon Nimmo, Superintendent of the Sarnia Golf and Curling Club and President of the South Western Golf Superintendents Association, announced a meeting on regionalization at the Blue Water Golf Club on August 23rd. After the meeting, everyone enjoyed a round of golf. Graham Shouldice, Superintendent of Highland Golf and Country Club, and his guest won low gross and low net prizes respectfully.

The Glen Abbey Experience

What Did We Learn From It
R.W. Sheard¹, Dennis Pellreene²,
and Mike Van Beek²

The Glen Abbey course, designed by Jack Nicklaus, was built in 1975 using all-sand rooting media on the greens. They were stolonized with Toronto C-15 bentgrass from Warren's Turf Nursery near Chicago. Rave reviews were written about the condition of the course through to 1980 and in Feb., 1981, the R.C.G.A. purchased Glen Abbey to make it the permanent home of the Canadian Open.

Problems, however, were already beginning to appear on the horizon. In July, 1980, greens 14, 16 and 17 suddenly died out in large patches, deterioration often occurring within a period of 48 hours. No evidence of fungal infection was identified and the reason for the sudden deterioration of the turf was not discovered. Following overseeding with Pennncross the greens were in good condition by October, 1980, and following a second overseeding in the spring of 1981 were in excellent condition for the Canadian Open.

In early May, 1981, all greens except 14, 16 and 17 had the beginnings of the same symptoms notwithstanding a Rovral treatment at 4 oz/1000 ft² every two weeks from April 3rd. On the recommendations of a visiting consultant, who considered the greens to be nitrogen deficient, 1 lb N/1000 ft² was applied as Protruf 41-0-0 on May 8. On May 10 one and three-quarter inches of rain fell and the following days were characterized by cool nights and days in the 15-21 C range. But it was all of no avail. Between May 15 and May 18 most of green 12, 13 and 15 and parts of many others except those overseeded to Pennncross in 1980 died out, some within one day.

Soil samples were taken and sent to Guelph for analysis on June 4. Upon checking them over I could see nothing in the analysis I would not expect for a sand rooting media (Table 1). Plant samples were taken to Prof. Bob Hall who declared them

free of fungus. When Mike Van Beek called regarding the soil analysis he asked about micronutrients. I suggested he bring in a sample of clippings for analysis; explaining that soil analysis for trace elements is highly suspect but clipping analysis might give some leads to whether their problem was nutritional.

Examination of the results suggested nitrogen and potassium were on the low side even though 6.0 lb N, 1.82 lb P₂O₅ and 4.49 lb K₂O had been applied at this date since Feb. 26 (Table 2). Surely something was interfering with nutrient uptake or

application of copper sulphate at 0.06 lb CuSO₄/1000 ft². The recovery was now more permanent and overseeding with Pennncross of all greens which had been seriously damaged was initiated. As you know the Canadian Open was played on acceptable greens even though the Golden Bear may have made comments to the contrary. By August, however, the symptoms began to reappear so the greens which were affected were allowed to fade out to reduce competition to Pennncross during the fall overseeding operation.

That is a brief history of what happened at Glen Abbey in 1980 and 1981. Why did it happen? I cannot definitely say why, however, let's examine the evidence and draw some tentative conclusions.

Although foliar application of trace elements gave two to three days relief, a copper drench appeared to cure the problem for several weeks suggesting copper as a specific trace element involved in the problem. The influence of the copper treatments on tissue levels is illustrated in Fig. 1. I cannot accept, however, that copper deficiency was the specific cause of the problem for two reasons. First the sudden and dramatic loss of plants when growing conditions of moisture and temperature are optimal is unknown in trace element response studies. Second the level of copper in the tissue was not in the truly deficient zone of 2-5 ppm.

Could the condition be the same as the Chicago syndrome which devastated the Butler National at Oak Brook, Illinois, before the 1980 PGA tournament, and was reported at not less than 10 other golf courses in the Chicago area in 1980? It is interesting to note that all these courses used Toronto C-15 stolons from Warren's Sod Nursery in Chicago. Writing in the June issue of Golf Business, Roberts and Joe Vargas reported electron micrographs of the xylem of the vascular system of C-15 which were filled with bacteria; bacteria similar to those causing alfalfa dwarf and some diseases of fruit trees. In fact at the time we were attempting to solve the Glen Abbey problem word was out the tetracycline, a bactericide, was giving a degree of control in the Chicago area.

Back in 1882, Prof. Millardet of the Univ. of Bordeaux in France discovered that a mixture of copper sulphate and lime in water would control mildew in grapes, a discovery which led to the Bordeaux mixture which was used as a fungicide on a wide variety of crops until the late 1940's. The metal - copper - was the active ingredient. In our situation the copper applied as a foliar application and as the copper sulphate soil drench may have served to control the bacterial build-up in the xylem of C-15 bentgrass. It is entirely feasible that a bacterial population may build up in a few hours thus explaining the very rapid loss of the C-15 turf,

Table 2.

Element	Unit	Concentration	
		No.4 Green	No.6 Green
Nitrogen	%	2.60	4.90
Phosphorus	%	0.28	0.63
Potassium	%	1.25	3.38
Calcium	%	5.80	1.94
Magnesium	%	0.76	0.40
Manganese	ppm	246	95
Copper	ppm	8	33
Zinc	ppm	33	130
Boron	ppm	17	18
Iron	ppm	280	580

transport within the plant. Looking over the micronutrient levels in the clippings revealed only one element - copper - might be near a deficient level. At 8 ppm, however, it was not extremely low as many grass species grow very well at 5 ppm. Nevertheless if one were searching for a situation prone to copper deficiency one would look for a alkaline, strongly leached, sandy soil, high in organic matter and heavily fertilized with nitrogen. Certainly with a pH of 7.5 and 3.6% organic matter the sand rooting media at Glen Abbey filled the bill. The visual symptoms described to me of the young leaves becoming limp, remaining rolled or twisted and dying back from the tip with a characteristic right angle bend where the chlorotic condition started, suggested the classic symptoms of copper deficiency in wheat and barley.

With these points in mind Dennis and Mike initiated a program of foliar sprays of a liquid 20-20-20 which contained a full spectrum of trace elements and provided 0.2 lb N/1000 ft² on June 9 and repeated the applications at 3 to 5 day intervals. Recovery was evident within 48 hours, however, it only lasted 3 to 5 days.

Since the recovery was not long-lasting we reasoned that the copper was not being absorbed readily through the leaves so we switched to a direct soil

Table 1. Soil test results for No. 4 green, Glen Abbey Golf Course 1981.

Analysis	June 4, 1981	Oct. 25, 1981
Phosphorus	25	45
Potassium	80	88
Calcium	3900	—
Magnesium	150	185
pH	7.5	7.2
Organic Matter	3.6	—

1. Professor, Dept. Land Resource Science, O.A.C., University of Guelph.

2. Superintendent and Assistant Superintendent, Glen Abbey Golf Course, Oakville, Ontario.

a loss too rapid to be directly associated with a trace element deficiency.

Why did it take five years for the situation to appear? Some greenhouse work on pure sand rooting media at Guelph using Penncross and copper free chemicals for fertilizer showed that initially Penncross will contain 30-40 ppm Cu. However, with continued leaching of rainwater through the sand and removal of clippings the small inherent amount of copper would eventually be deleted so that over a period of a few years the copper concentration would fall to much lower, if not deficient, levels. Whereas the copper level may have initially been acting as a bactericide preventing the Chicago syndrome from developing, with decreasing copper levels over the period of 1975 to 1980 the bacterial population brought in on the C-15 from Warren's Nursery was finally allowed to increase to the pathogenic level.

Our experience at Glen Abbey illustrates some very important management considerations for successful production of turf on all sand rooting media.

The first point is the limited value of soil tests for evaluating nutrient requirement of turf on all-sand rooting media. Remember soil test were primarily developed for normal soils having all the nutrient retention power of the clay minerals; sands have no

retention ability for potassium, copper, zinc and many other nutrients. Thus no matter how much potassium is added the soil test will continue to read low indicating still more potassium is required. Furthermore soil analysis is of only limited value for trace elements - there just has not been sufficient studies to indicate what the extractable copper, for example, means in terms of plant growth.

The solution is to use tissue analysis. Certainly it is a more expensive operation, \$16.00 per sample compared to soil tests which are free, however, a turf manager should not get involved with all-sand greens if his budget doesn't allow this type of expenditure. A one-pound sample of clippings removed from the basket after cutting a green is satisfactory. Freeze the sample until you can bring it to Guelph or dry it artificially so that it doesn't ferment.

The second is to not mix chemicals when you have a plant nutrition problem. A simple case is where there is a need for potassium don't apply a mixed fertilizer to remedy the potassium shortage. You may end up with excessive nitrogen. If a trace element problem is diagnosed don't apply a shotgun mixture. Have a tissue analysis performed and apply only the one suspected of being deficient. If that element doesn't solve the problem then move to the second most likely suspect. Remember that

whereas a plant requires 12 elements from the rooting zone for optimum growth it is unlikely all twelve are deficient.

The third point is that cultivars may have widely differing tolerance to pathogens and/or trace element requirements. Penncross has been successfully overseeded at Glen Abbey on greens which would not support C-15. No. 9 East green at the Board of Trade has been very successful for 6 years using a sand rooting media and Penncross. The use of Milorganite for summer feeding has kept the copper level at 13 ppm. But don't discard C-15, it may only require the maintenance of 40-60 ppm copper in the tissue by CuSO_4 application two or three times per season to maintain this Queen of bentgrass. I have a feeling Joe Vargas and his associates will come up with this answer to the problem.

Finally all-sand greens require a high degree of management skill. The soil provided by Mother Nature has a built-in buffering capacity to compensate for errors in management. The all-sand green has not. It is, in fact, a super hydroponics system. As a result the control of the fertilizer program is much more critical. Thus understanding plant nutrition, keeping accurate records of all additions, using tissue analysis when problems occur and seeking advice on their solutions are all attributes of the successful superintendent of all-sand greens.

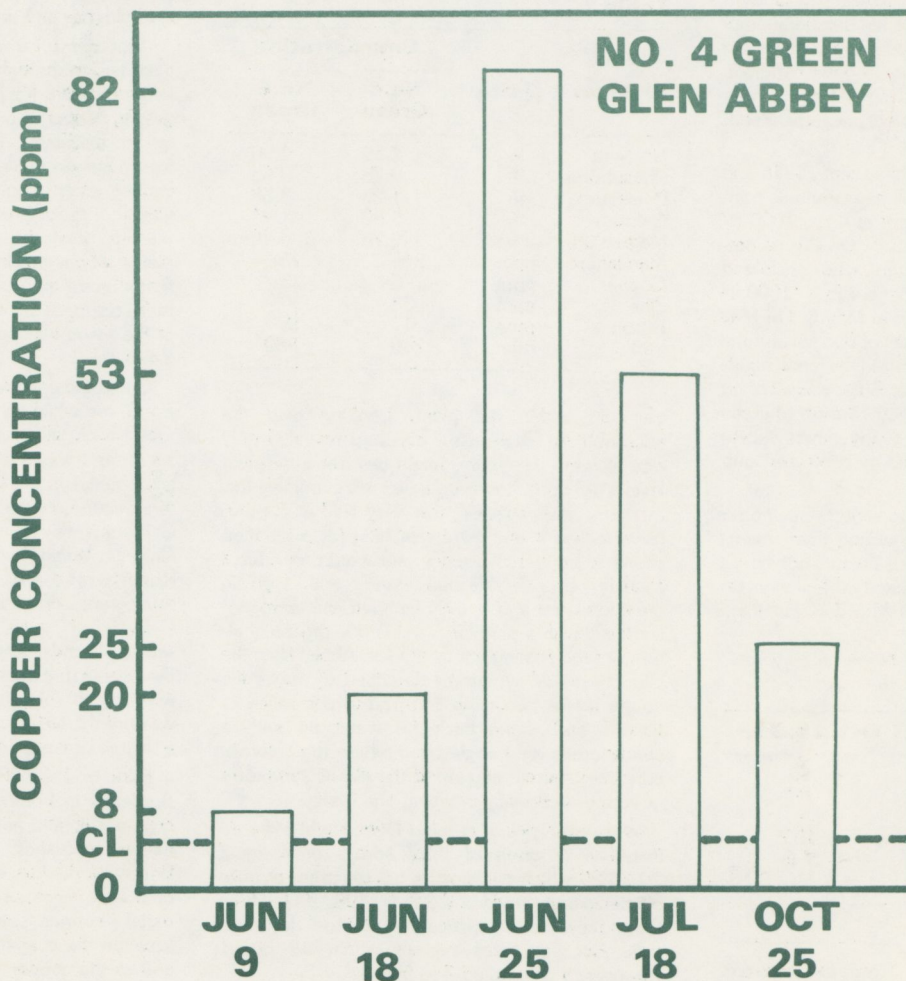


Fig. 1

The copper concentration in clippings from No 4 Green, Glen Abbey Golf Club, from June 9 to October 25, 1981 (CL refers to the accepted critical level).

Shattercore Aerification



This is a subject that continues to go on & on, we never seem to hear the end of it or it's importance to cultural practices in relation to growing fine turf.

Over the years I have aerified just like everyone else but never have been completely satisfied with the practice as specified. Although some good results did occur to varying degrees. The standard practice of coring is a very time consuming method and just too much flack is gotten back from the golfer when it is being done. And it is still a cultural practice we must continue to do.

Therefore for many years I have been searching for a better more efficient way to accomplish this practice.

It all started with a new problem green at Chevy Chase Golf Club. Trying to solve a severe no response growth situation regardless of nutritional & watering factors and still having perfect Ph factor.

Consultation and various opinions from many different professional people in the business was considered. The recommendations varied to the point of even redoing the green; which was out of the question.

During the winter of 1980 I stopped at the Arlington Club where George Widner is Supt. and we discussed Aerification and he showed me something different. A solid homemade tine, using it for approximately 8 years with no problems.

Well, I had my curiosity aroused and decided to make up a set to try out next spring. My first experiment was on a tee that was beat to death with about 30% bare ground. The ground felt like a small earth quake was occurring around my Ryan WG-24; the soil was totally fractured and the bare areas became perfect for overseeding. The process left the ground fluffy not just slick round holes.

Experiment No. 2 the problem green using a 5/8" solid homemade tine I proceeded to aerify and had the same quaking action which loosened the green up totally even in between the holes. Following the aerifier was one man with a roller. This is a must afterwards. Then I proceeded to apply the Indiana Sand dune sand that Dr. Daniels prescribed. This practice has been done on this green once a month for the entire 1981 season and has done a 180 degree reverse. This problem green now plays just like the other 17.

This being the case I decided to do the balance of my greens in the same fashion but continue to use my 1-1-1 mix of top dressing. The results was outstanding and far more efficient and economical in total using only two men.

The first thing done was to pull the cup, then make one pass roll and replace the cup, then continue aerifying. This allowed the golfer to still enjoy the use of the green and not interfere with his game and I still got the job done.

There was a side benefit that occurred that I had not planned on. We all know about the wear pattern that the riding Greensmower gives us. Well, that problem has been eliminated due to this method of aerification, along with it's efficiency and cost saving factors.

I made up a second set and Art Cleason happened to have a lathe and he turned down one set for me to the exact same size as a standard Ryan 3/8" tine. For which enough gratitude cannot be expressed.

I used these tines in the middle of June in 90 degree weather with perfect results again.

This method works on the principal of ballistics and shatters the entire area around the hole and believe me there is no compaction due to this type of tine. The surrounding ground just explodes and becomes soft and fluffy, again taking water like it is supposed to and the turf just responds far better.

This practice even works for wear & tear areas due to golf carts traffic wear, and that is a headache for all of us we can do without.

The material for making these tines is available at your local hardware store, standard 5/8" cold roll steel rod. And all you do is cut them to the same length as a standard tine and put a rounded tip on one end using your grinder. It takes about 20 minutes to make one tine. If you have a lathe you can make up any size you desire.

At this point I know there is a great deal of skepticism in the minds of many of you reading this article. And all I know is that for the first time in all the years that I have aerified, I am finally satisfied with the practice.

It worked for me and it has been working for George for many years with no adverse effects.

Think about it. Try it, evaluate it for yourself, then appraise the results. I believe you will be pleased with the results and the cost saving factors.

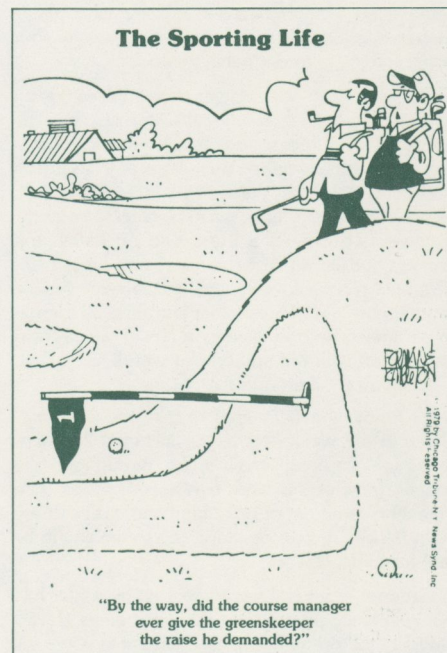
If you remember many years we had a hand unit with solid tines to take care of localized dry spots which took forever to correct a very limited area problem. Well, this is the premise I used to make my decision on in relation to using solid tines in the Ryan WG 24.

All I know, gentlemen, is that the new method WORKS for me. And it should work for you. ☺

Leonard Schnepf, Supt.
Chevy Chase Golf Club, Wheeling
Credit - The Bull Sheet Dec. 1981



Credit — Divots July 1982



"By the way, did the course manager ever give the greenskeeper the raise he demanded?"

1982 Peter Jackson Classic

by Bill Hynd

Here we are, 1 week after the event, all tournament paraphernalia cleared away; including 2.5 miles snow fencing, 1,200 posts, 11 miles roping and 2,200 stakes, numerous towers, CBC trailers, concession tents and all debris etc. A couple of heavy showers and within a week most evidence of heavy traffic will have grown in.

Winter injury devastated St. George's, disease was minimal but the combination of dessication on slopes and thawing and freezing in the low lying areas (which we don't expect in the same year) was the climax to what appeared ever-increasing winter injury the past number of years, particularly in the large fairway areas.

We Superintendents have been at the mercy of the Poa plant this year, if there's safety in numbers in all being in the same boat, I for one am not happy in losing a year nursing back poor conditions. Particularly, when one looks with gratification at the results of sod work the previous Fall. Pennecross to replace worn tees, Nugget on all green surroundings — beautiful.

In previous renovation programmes on fairways as a result of winter injury, we usually waited and hoped that it would turn around and of course it never did. Well, in view of this past experience, we decided to aerify 4 fairways — 6 passes with 3/4 hollow tines and dragmat the ripped up mess. All before the course was opened on April 24th — less aggravation to members — anyway who needs members asking all sorts of questions when your pride and joy is under harsh treatment!

On May 20th we supplemented this work by overseeding several tardy areas with Ryegrass. The front of No. 9 green was dessicated and what a mess. The surface ripped up in large patches just as President, Bob Moir, passed by with his wife, well, all one can say is "you've got to be cruel to be kind!" Anyway, we cleared a truck load of thatch, top dressed and broad cast Rye grass and fenced off. This area recovered very well, incidentally, for the tournament, as did most other low areas by tournament time. The one exception No. 4 fairway was marked off with red spray paint with L.C.P. (Lift, Clean, Place) all around the perimeter.

All renovation (aerifying) of fairways was completed in a 2 week period, this included 2 Greensaires on isolated small areas throughout the course, most of this work was accomplished by a man who came out of retirement and has been my main fairway mower operator, still something to be said for pride of work.

Greens — several were badly hit by winter kill. We eventually plugged out the worst areas (1,000 plugs) in the centre but by tournament time we still

used around the edges. Observing that one of the worst winter injured greens of previous years, No. 16, came through in beautiful shape, keeps all of us humble.

We had done all preliminary work on greens — fertilized .6N on June 9th and top dressed, followed by verticutting vigorously.

By June 26th my main concern was the slowness, 7' to 7' 5" on the Stimpmeter, and this only 5 days before the 1st round. The figures following show quite a dramatic speeding up.

The most satisfaction derived from hosting a major championship is that the golf course gets a week's rest.


NO GOLF CARTS ON FAIRWAYS NO BALL BRUISES ON GREENS

Some 600 rounds of golf over the 7 day period by the best golfers in the world, usually hitting the ball cleanly off the fairway.

GREENS DOUBLE CUT IN EVENING, ... SINGLE CUT IN MORNING. FAIRWAYS MOWED TWICE DAILY. TEES MOWED EACH MORNING.

The golf staff of 14 excelled. With the golf course in the worst possible shape in the Spring and a heavy construction programme, 3 new ladies tees, new sand traps and pathways, it was all work and never a dull moment, and by tournament time we were ready, all toggled out with new "uniforms" — navy blue pants and sky blue golf shirts with the St. George's Dragon and GREENS STAFF emblazoned thereon.

And what does the Superintendent do during tournament week? Well, in the early 6:00 am start following behind the crew who are hand raking sand traps, dragging a hose over fairways, before mowing, hole changing etc. the outstanding difference from regular routine maintenance is very evident in the stillness of the early morning. That is, the mowing of fairways, greens and collars the previous afternoon when the grass is dry provides an absolutely superb playing surface, with complete dispersal of grass clippings. Another treat is to throw a few balls onto the greens to check the speed and the break, you then have some foresight as you watch the play later.

It is always interesting to meet and work with the LPGA tournament officials. In this case Ed Gowan, Joe Henley and "Boots" Widner. They are always quite meticulous in providing the fairest conditions, pin positions on greens are faultless, it is noticeable that they relax more as the tournament gets underway. Of course, this is subject to the whims of the ladies as they come off the course. Ed Gowan did make the pleasing suggestion that I discontinue double cutting as the greens were getting too fast. 

Review and Comments of Some Interesting Research


J.L. Eggers,
University of Guelph

Dr. L. Art Spoomer from the Department of Horticulture and Illinois Agricultural Experiment Station, University of Illinois, Urbana, Ill. 61801, USA has been conducting research and writing on pore space and aeration of root zone mixes for high foot-traffic areas for some time. A list of some of his papers which the reader may wish to refer to are listed at the end of this review. A manuscript appearing in the November issue of the Canadian Journal of Soil Science, "Spoomer, L. Art. 1980. Graphical prediction of porosity and water retention in sand-soil mixtures for drained turf sites. Can. J. Soil Sci. 60:787-791" describes the construction of a model (which you can construct on graph paper) for the prediction of the aeration and water-retention properties of existing sand-soil mixtures or the prediction of the correct bulk volume proportions of sand and soil to yield a mixture suitable for turfgrass growth on putting greens.

In his review of the problem of preparing root-zone mixes for putting greens, Dr. Spoomer indicates that large pore spaces must be created in the mixture which will remain intact under heavy foot traffic, will drain and provide aeration for root growth despite the close proximity of the water table. The mixture must provide this aeration without excessive reduction in water retention. He indicates that under foot traffic, natural soils tend to compact and lose their structure because of inadequate strength of the soil aggregates. This breakdown results in decreased infiltrability and increased surface ponding. As sand particles do not break apart under foot-traffic stress, they are used to hold open pore spaces. However, sufficient sand must be added, for when only small amounts of sand are incorporated into a soil, the sand particles 'float' in the soil without increasing aeration. An increase in aeration will not take place until the proportion of sand is increased in excess of the 'threshold proportion' and these pores formed by the sand particles are voided of soil.

To determine the appropriate bulk volume of the available sand and soil for the root zone mixture, a graph is constructed using the measured sand porosity and the measured soil porosity (both of which can be obtained from liquid displacement procedures using the technique described by Spoomer, 1979). Those wishing to construct such a graph should obtain a copy of this paper. For more detailed instructions the 1979 and 1980 papers can be read in the Journals at the University of Guelph library.

Some of Dr. Spoomer's papers include; Langans, R.W. and A. Spoomer, 1967. Soil moisture and aeration I. The basic concept of soil. The Golf Superintendent, July: 10, 12, 35. Spoomer A and R.W. Langans, 1968. Soil moisture and aeration II. The nature of plant water. The Golf Superintendent June: 16-22.

_____ and _____ 1969. Soil moisture and aeration III. The nature of soil moisture. The Golf Superintendent June: 16-22. Spoomer, L.A. 1974. Plant, Soil and Water. Their relationship. The Golf Superintendent. April: 53-55. Spoomer, L.A. 1979. Three simple demonstrations of the physical effects of soil amendment. HortScience 14:75-77. Spoomer, L.A. 1980. Prediction and control of porosity and water retention in sand-soil mixtures for drained turf sites. Agron. J. 72:361-362. 

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**SPECIAL FALL MEETING
TYANDAGA GOLF CLUB
September 8, 1982
By-law and Regionalization Meeting**



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