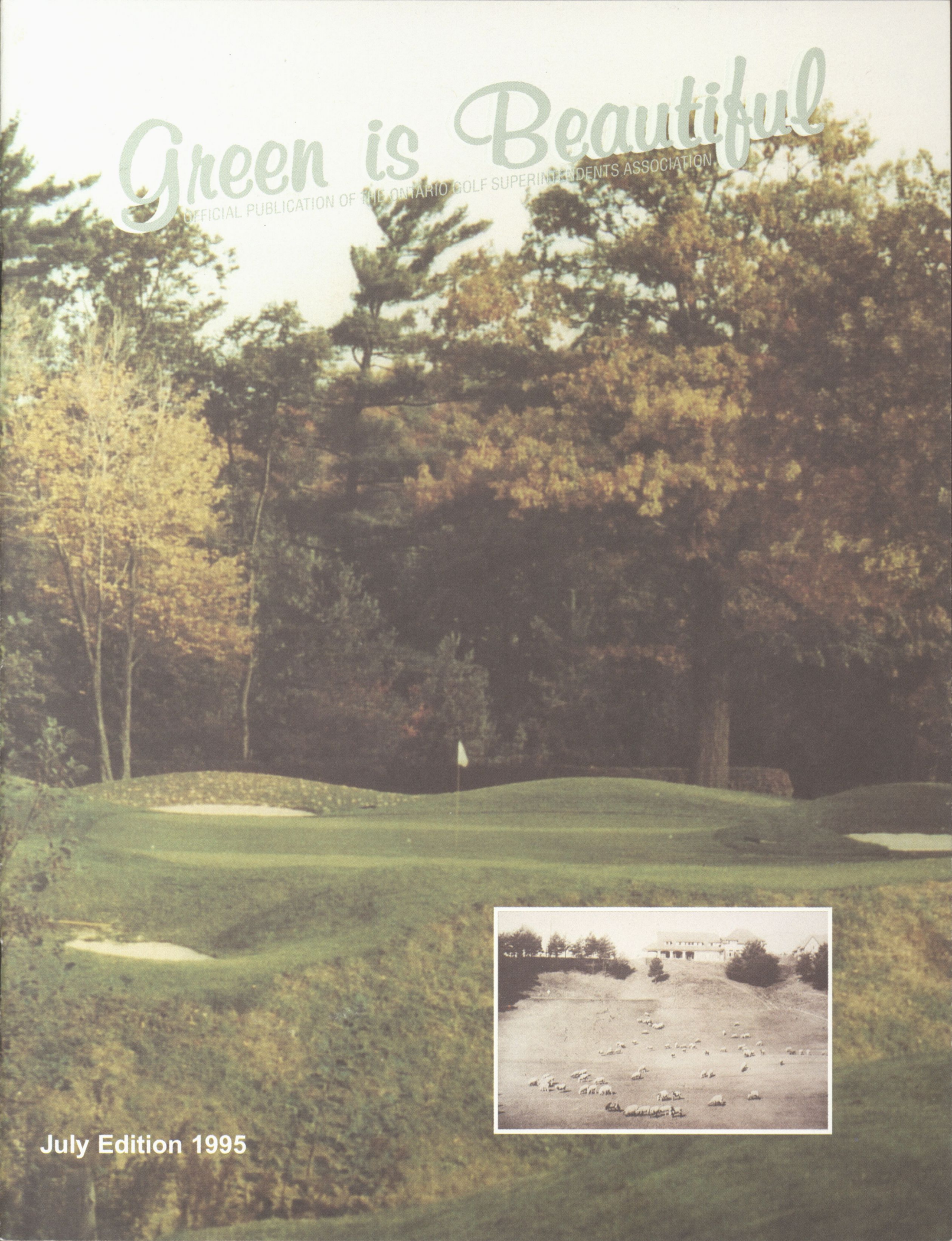


Green is Beautiful

OFFICIAL PUBLICATION OF THE ONTARIO GOLF SUPERINTENDENTS ASSOCIATION



July Edition 1995

MODEL 398 ROTARY BLADE GRINDER

Optional work light maximizes light in the darkest of shops. (P.N. 3707340)

Optional Dust Collector prevents grinding grit from contaminating the work area. Simple design is easy to use, with no moving parts or motors to wear out. (P.N. 3980930)

One-piece Blade Guide features quick adjustment to ensure blades are ground accurately.

Water tank placed in convenient location for quick cooling during grinding and to prevent overheating of the cutting edge.

Blade storage shelf for grinding multiple blades without leaving the machine. (Included with optional pedestal.)

Aggressive bond grinding wheel and proper wheel rotation carries grinding heat away from cutting edge, increasing blade life before resharpening.

Standard blade balancer conveniently placed for quick, easy use.

3/4 HP heavy-duty motor.

Optional Magnamatic Blade Balancer checks balance of blades as well as side-to-side tracking. (P.N. 3708370)

Optional pedestal for stand-alone, convenient shop placement. (P.N. 3980970)

MODEL 398 ROTARY BLADE GRINDER

Designed to handle all common rotary blades on the market, the rugged Foley-United Model 398 Rotary Blade Grinder will quickly and efficiently sharpen and hollow grind your rotary blades to any angle desired.

The Rotary Blade Grinder is equipped with a built-in blade guide and balancer to give you a uniform cutting edge every time. The more powerful Model 398 makes this a more aggressive grinder than ever before. The unique, heavy duty, cast iron and steel construction of the Model 398 base make grinding of all blades, including gull-type blades, fast and accurate.

Optional equipment includes a dust collector/water tray attachment for cleaner operation, a pedestal stand, work light and Magnamatic Blade Balancer.

Specifications

Order Number 3981951

Standard features:

6" x 3/4" grinding wheel
Built-in balancer

Length 20"
Width 18 1/2"
Height 11"

Grinder Motor

3/4 HP fully rated
115/220 volt, 50/60 cycle,
single phase motor
operating at 2850/3450 rpm.

Weight 50 pounds
Power 115/220 volt, 50/60
cycle, single phase.

Optional equipment:

Dust collector, Water tray
attachment, Pedestal stand,
Work light, Magnamatic
Blade Balancer



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(905) 338-2404 (905) 637-5216

May Edition 1995

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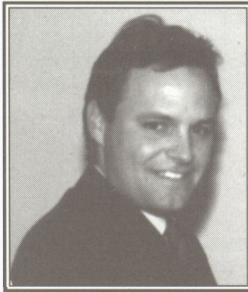
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Presidents Message

GREETINGS - June has certainly been a struggle with high heat and humidity, drought conditions and low water levels. As I am writing this we are getting hit with our second consecutive heavy thunder storm in as many days. Looks like we'll be pumping out traps tomorrow. That's why I love this job, its always something different.

Please allow me to make a correction from the last Green Is Beautiful and the by-law section of our membership roster. A class F member does not need a class 1 and 3 pesticide license. Sorry for any inconvenience this may have caused.

I hope to see everyone at our annual Greens Chairman, Superintendent Day at Rosedale Golf Club on Monday, July 17 and, as I am limited for space, watch very shortly for a message from the President Report.

For the O.G.S.A.

John Taylor

"No one can make you feel inferior without your consent"

- Eleanor Roosevelt

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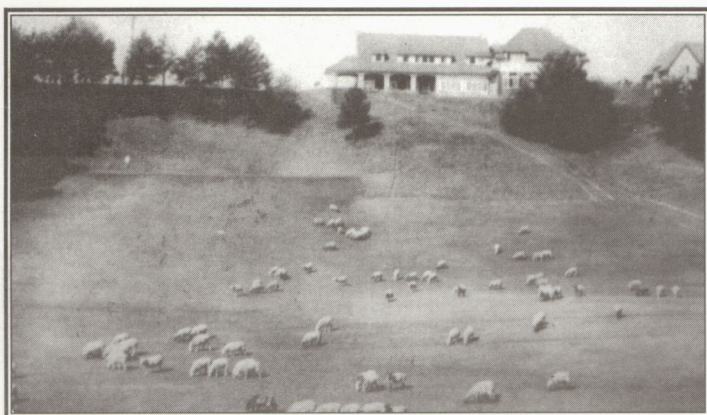
Cover: Rosedale Golf Club. "Superintendent Bill Fach"



Rosedale and 102 Years

by Bill Fach

This year the Green Chairperson, Superintendent tournament will be held at the Rosedale Golf Club in Toronto. Rosedale is a private golf club located south of the 401 just off Young Street, only 20 minutes from downtown. The history of Rosedale dates back to the year of 1893. The club first played under the name of Deer Creek Park and for two years played over a nine hole course in Moore Park. After playing on it's Moore Park Land, the club moved into Rosedale sharing the clubhouse with the Toronto Lacrosse Club. As the game increased in popularity, the club changed its name from the Deer Creek Golf Club to the Rosedale Golf Club and secured a charter of incorporation. As the city grew, the club was forced to obtain new property and in 1909, purchased the land near Hog's Hollow in the Don Valley. The club purchased 134 acres for a price of \$40,000.



Rosedale, CIRCA 1920

Tom Bendelow was Rosedale's first course architect, designing the layout in June of 1909 in a single day, for which he received a fee of \$25. His design made the first two holes headed almost to the back of the property. Holes' three through seven marched in vertical, parallel formation along the furthest distances from the clubhouse and eight through thirteen constituted a kind of Amen Corner. The balance of the holes brought the course back to its dramatic starting point. The course was ready for play in the late spring of 1910. With all the changes made to the course in the subsequent years, Bendelow's basic layout still remains intact.

In the spring of 1920 the construction of its present course was carried out under the direction of Donald Ross. Ross's changes to the old course fell into the category of massive renovation, in some cases he virtually created new holes. Ross's plan was completed in 1924. The Rosedale



Rosedale, Hole #3, Par 4

course was 6,400 yards in length having five par 4's, two par 5's and two par 3's on the front par 36. The back nine consisted of six par 4's, two par 3's and one par 5 for a par 35.

Over the next sixty years the golf course went through several renovation projects that, combined with the aftermath of Hurricane Hazel, altered the original design again. Architects like Howard Watson, David Moote and Rene Muylaert had their hands in adding changes to the Ross design. In 1988, course architect Robert Cupp was contracted to design a master renovation plan for the 18 hole course which would reflect the flavour of a "Ross design" while providing new golfing challenges for the



Rosedale, Hole #9, Par 4

membership. In the plan all bunkers were reshaped, plus the addition of 24 new ones. Thirty-one new tees were added, three greens were built and over 70,000 cubic meters of soil were moved to reshape three new fairways. The master plan is now complete with the last major work finished in the fall of 1994.

The golf course, although quite short in length by today's standards, still provides a good test of golf. I think that Rosedale will live up to the other great courses that were played in the past. So I hope you've sent your entry in on time so that you and your Green Chairman can enjoy this great member's course.

Pro/Super at Monterra



15 Hole "Coffin"



13 Hole "Revenge"



Low Pro Al Patterson

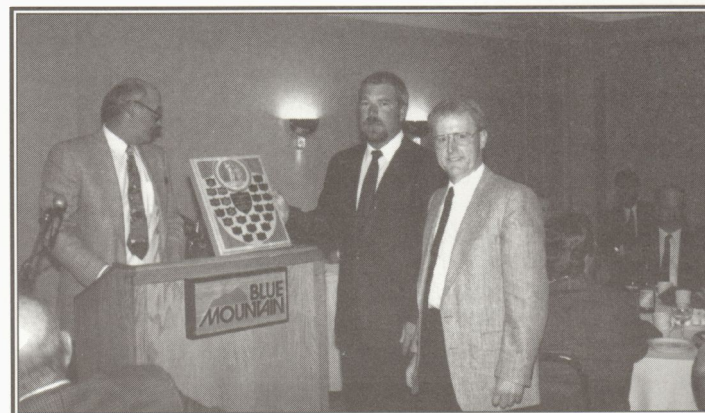


Low Net Superintendent Ed Farnsworth

Breathtaking! Unforgiving! Monterra, as these pictures will attest, was all of that and more. In combination with good weather and great hospitality the day was one to remember. Ron Heesen managed us through a slow start, thanks to an over turned tanker which closed the 401 at Weston and delayed some of our contingent. Once we were on track and the juggling had finished we got a taste of a very interesting layout. With hole names like "The Coffin" (which actually has a coffin in the trees), (one that I felt had been specially prepared for me), and "Revenge" you can guess that the course wasn't going to give anything away.

The winners of the team trophy were Dan Lavis and Pro John Davis of Ingersol Golf Club. Ed Farnsworth and Pro Paul Kennedy of Deerhurst captured the low net team. Low Pro (66) was Al Patterson from Cedarbrae Golf Club, low Super was Dan Lavis (76) and Ed Farnsworth accepted low net superintendent.

For those of you who may have missed the opportunity to experience Monterra hospitality, there is a Georgian Bay Days event coming up on September 26. Please see the Bulletin Board for more information. Congratulations to all good sports in attendance and many thanks to Ron Heesen(Super), Gary Slater(Pro) and George Weider(Owner).



Low Team Dan Lavis and John Davis

GUELPH TURFGRASS INSTITUTE SITE DEVELOPMENT AND RESEARCH ACTIVITY

The main features of site development and research activity at the GTI for 1994-1995 are described below. The shift from site development to research activity has been significant and gratifying.



Dr. Ken Carey at the G.T.I.

Infrastructure

Research plot areas. Eight of the 16 research ranges were renovated for new research projects in 1994, three more are being renovated in 1995. Generally the renovation involved killing the ryegrass cover with glyphosate, cultivation, and reseeding. One range was sodded, and some areas remained fallow until spring of 1995. The ranges renovated so far in 1995 will be reseeded to creeping bentgrass and annual bluegrass, Kentucky bluegrass, and fine fescue. A rootzone compaction problem (construction related) that affected sections of the plot area had produced standing water and winter kill in some ranges in 1994. Three of the affected ranges were cultivated with a mole plough at 70 cm depth in strips 2 m apart (one range was cultivated with the perennial rye cover still on, the other two with the turf removed). This may be an opportunity to experiment with some other cultivation treatments such as deep tine aerification or water injection systems for spot remediation of compaction.

USGA greens and native sand green. A final trim of the USGA greens was done in the spring, and the greens were seeded to Penncross creeping bentgrass in June 1994. The seeding rate was 0.75 kg 100 m⁻². Mowing with walk-behind mowers commenced at 5 mm on June 30. Several research projects have been initiated on the USGA greens. The area surrounding the greens were largely sodded with Kentucky bluegrass in July 1994, to deal with erosion

concerns. Some of the remaining area around the greens was seeded to Kentucky bluegrass in August.

Irrigation system. Phase I of the irrigation system has been completed and tuned-up, and we are making regular use of the system for maintenance and research (about 2 million gallons of water were pumped into the irrigation reservoir this season to keep it full in 1994). We have added a few turf valves to the system; an expansion (Phase II) is planned for summer 1995, which we hope will give us at least two more irrigated ranges, as well as some other improvements.

Irrigation pond supply. A permanent pond supply from the GTI supply well was installed in May 1994. This can provide about 60 US gpm to the irrigation pond.

Toxicology microcosms. Power supply, water supply and drainage systems were completed for the toxicology microcosms adjacent to the irrigation pond. Several research projects studying toxic chemicals in aquatic systems are underway in this facility.

Weed garden. The demonstration weed garden adjacent to the G.M. Frost Building is largely complete.

General. Several large areas that had remained unvegetated following construction were seeded to tall fescue/trefoil or perennial ryegrass. These areas will remain low maintenance until future development, with the exception of the area next to the parking lot, which will be used for overflow parking. Lighting, power supply, and water have been installed at the maintenance building, which has also been equipped with tools, benches, and



Pathology Green in trees

shelving for routine maintenance, research construction, and storage.

Research projects (also see Table 1)

Greens. Several research projects have begun on the USGA greens, including taking background data on the establishment of the greens, a study on monocultures vs mixed cultures and stress tolerance, a fertility study (organics), a study on shade patterns and dew persistence,

and planning for a study on water balance in U.S.G.A. Greens.

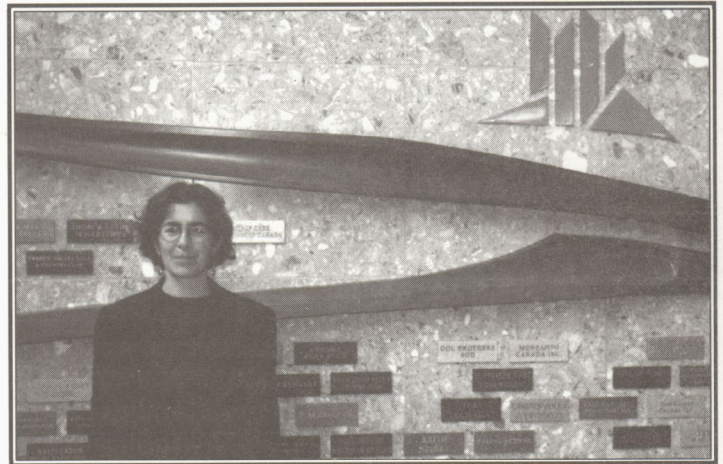
Plot Area. In the research ranges, one range has been renovated to Cobra bentgrass (3 blocks) and poa annua (1block) which will be maintained at fairway height. The Poa annua is being used to study biocontrol. A second range has been sodded to Kentucky bluegrass, with an array of instrumentation in the rootzone to study soil moisture, water movement, and irrigation scheduling in Kentucky bluegrass. Matching instrumentation has also been installed in a perennial ryegrass range. One block of an irrigated range is being prepared for a study on rubber crumb as soil amendment under seeded creeping bentgrass and Kentucky bluegrass. One range is allocated to perennial ryegrass breeding trials. Two ranges have been seeded with a number of turfgrass species and mixtures for a new cultivar evaluation program which is being carried out in conjunction with Kemptville College of

Agricultural Technology and Ridgetown College of Agricultural Technology. These plots will also be used to study non-chemical weed control. One range is being seeded to study phosphate mobilization in seeded turfgrasses, and an area next to the pathology green will be sodded to study necrotic ring spot in newly laid sod. In the fall of 1995, the GTI will seed two large NTEP Kentucky bluegrass cultivar trials, one in high maintenance conditions, and one in low maintenance conditions. Other turf areas have been established in anticipation of future needs.

Lysimeters and soil science research. GTI Researchers from the Department of Land Resource Science have initiated several research efforts at the GTI site in 1995, including a set of 44 new lysimeters, equipped with state of the art sensors and sampling instrumentation, as well as a large area of turf to study grasses and turfgrass systems.



Norm McCollum



Turf Extension Specialist Pam Charbonneau

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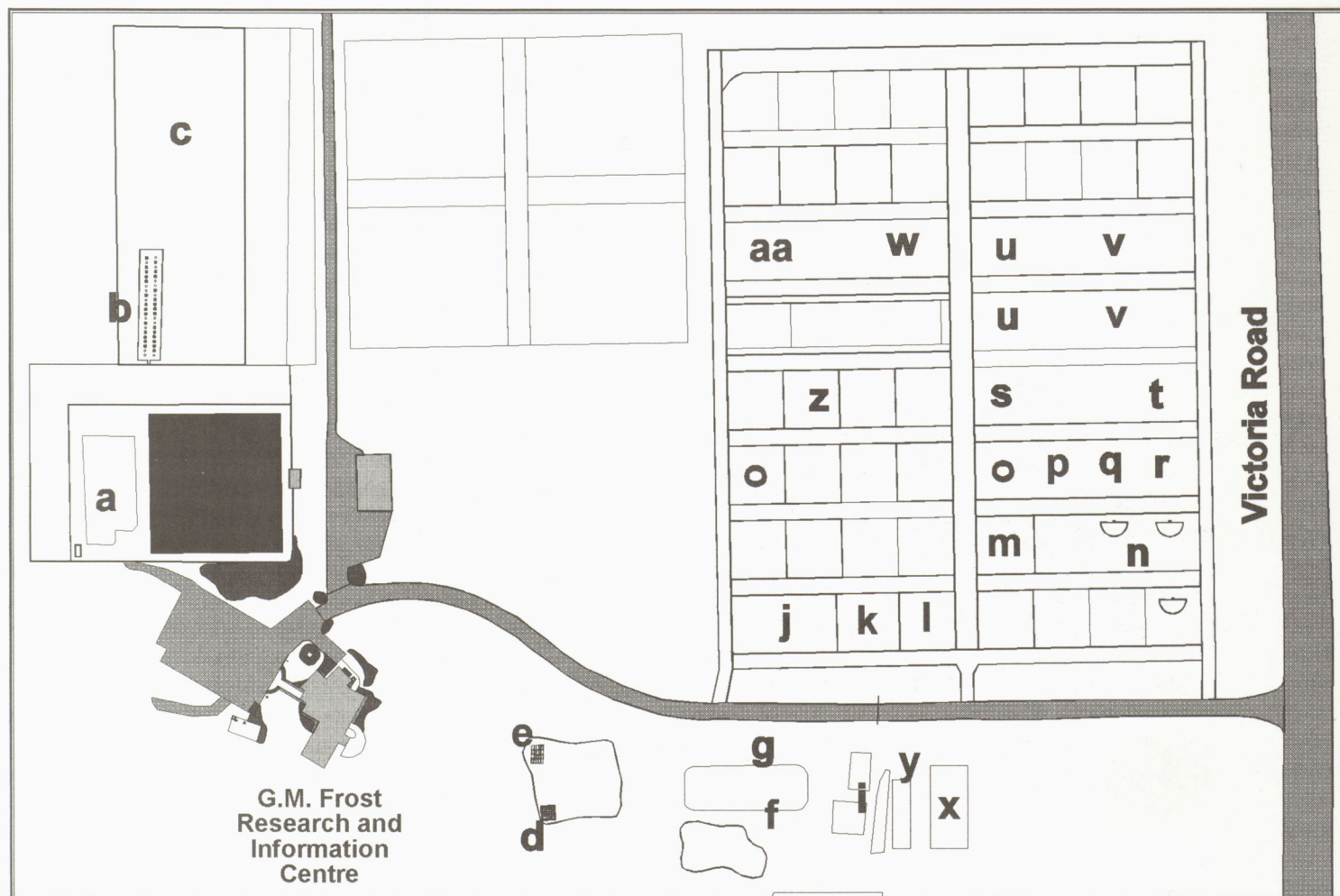
Over 30 Years Experience!

Table 1. GTI research projects - 1994-1995.

a	Canadian Centre for Toxicology - Persistence and toxicology of chemicals in aquatic systems	
b	G. Kachanoski New lysimeters for study of turf rootzones	Land Resource Science
c	C. Wagner-Riddle Nitrogen volatiles emitted from turf	Land Resource Science
d	Y. L. Chen, J. L. Eggens, T. Hsiang, J. C. Hall, and K. Carey Stress response of single and multiple cultivar populations of turfgrass species	Horticultural Science, Environmental Biology
e	J. L. Eggens and K. Carey Organic fertilizers on bentgrass putting green turf	Horticultural Science
f	T. Hsiang & S. Cook Fungicide control of dollarspot disease	Environmental Biology
f	T. Hsiang & S. Cook Fungicide control of grey snow mould	Environmental Biology
g	X. Liu and T. Hsiang Organic fertilizers on creeping bentgrass putting green turf	Environmental Biology
h	T. Hsiang & S. Cook Sodded Kentucky bluegrass and NRS	Environmental Biology
i	T. Hsiang & S. Cook Sodded Kentucky bluegrass and NRS	Environmental Biology
j	T. Hsiang and W. Barton Resistance of fungal pathogens to DMI fungicides	Environmental Biology
k	S. R. Bowley, D. Hancock, C. Hall, K. Sagan Variety evaluation - Bentgrass	Crop Science, Environmental Biology
l	T. Hsiang & P. Goodwin Control of annual bluegrass with low-dose herbicide plus pathogens	Environmental Biology
m	Pieter Groenevelt Turf amendment by rubber crumbs	Land Resource Science
n	G. Kachanoski, T. Gillespie, P. Voroney Water and Chemical Management Systems for the Turfgrass Industry	Land Resource Science
o	J. L. Eggens and K. Carey Slow-release fertilizers on perennial ryegrass turf	Horticultural Science
p	S. R. Bowley, D. Hancock, C. Hall, K. Sagan Variety evaluation - Kentucky bluegrass	Crop Science, Environmental Biology
q	S. R. Bowley, D. Hancock, C. Hall, K. Sagan Variety evaluation - Perennial ryegrass	Crop Science, Environmental Biology
r	S. R. Bowley, D. Hancock, C. Hall, K. Sagan Variety evaluation - Fine fescue	Crop Science, Environmental Biology
s	S. R. Bowley, D. Hancock, C. Hall, K. Sagan Variety evaluation - Tall fescue	Crop Science, Environmental Biology
t	S. R. Bowley and D. Hancock Evaluation of experimental breeding populations of perennial ryegrass	Crop Science
u	S. R. Bowley, D. Hancock, C. Hall, K. Sagan Endophyte alkaloid seasonal profiles and effect of N	Crop Science, Environmental Biology
v	S. R. Bowley, D. Hancock, C. Hall, K. Sagan Variety/species performance under no chemical input management	Crop Science, Environmental Biology
w	J. C. Hall and Karen Sagan Crabgrass control in Kentucky bluegrass	Environmental Biology
x	J. C. Hall and Karen Sagan Non-chemical weed control in turf	Environmental Biology
y	J. C. Hall and Karen Sagan Pendimethalin timing and turf seed germination and establishment	Environmental Biology
z	G. Stephenson Pesticide residues in compost	Environmental Biology
aa	J. C. Hall and Karen Sagan Broadleaf weed control in turf	Environmental Biology

Table 1. GTI research projects - 1994-1995.

Pam Charbonneau	Lawn IPM demonstration	OMAFRA
J. L. Eggens and K. Carey	Development of geographically based turf management software	Horticultural Science
J. L. Eggens and K. Carey	Colorimetry as a tool in turfgrass research	Horticultural Science
Pieter Groenevelt	Lysimeter study of rubber crumb amendments	Land Resource Science
J. C. Hall and Karen Sagan	Annual bluegrass control in putting green height bentgrass	Environmental Biology
J. C. Hall and Karen Sagan	Wetting agents in putting green height bentgrass	Environmental Biology
J. C. Hall and Karen Sagan	Wetting agents in fairway height bentgrass	Environmental Biology
T. Hsiang & S. Cook	Biological control of grey snow mould	Environmental Biology
M. K. Sears	European Chafer control	Environmental Biology
G. J. Boland and Ting Zhou	Biological control of dollar spot in turf	Environmental Biology
G. J. Boland and Silke Brebaum	Biological control of dandelion in turf	Environmental Biology



LEFT-HANDEDNESS

Definition: A devastating handicap in playlot baseball which results in at least one team member not being able to borrow a mitt from other players.

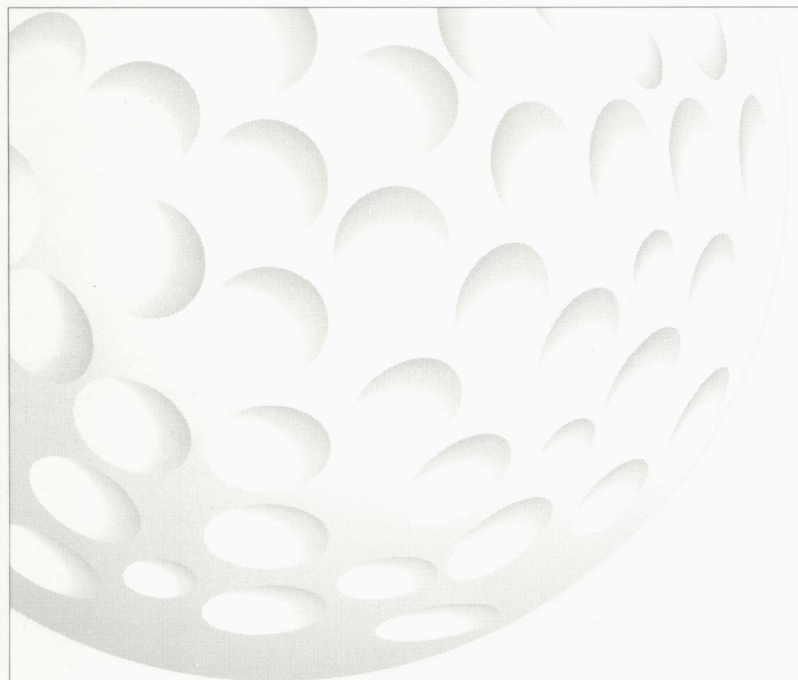
The Odds: Approximately 1 to 10 people prefer to use their left hand over the right in at least some tasks. Among children, 1 in 7 are left-handed, but many change over to accommodate the sway of the right-handed world. According to an Irish study, 1 in 20 fetuses suck their right thumb as opposed to the left, leading researchers to believe the same proportion of babies are naturally left-handed.

PRODUCT RELEASE



Rittenhouse Sprayers is pleased to announce the new Webster deep root tree and shrub feeding system. This completely self contained system drills and places four ounces of granular fertilizer between 8 and 15 inches deep all in one operation. The depth is ideal since it places fertilizers within reach of 90 percent of a tree's roots but out of reach of turf grass. The Webster system may also aerify by using vermiculite or pea gravel to improve the exchange of gases and moisture.

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**JIM JACOBI JOINS ISK
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MENTOR, OHIO — April 1, 1995 — Jim Jacobi has joined ISK Biosciences Corporation, the manufacturer of agricultural and specialty chemical products, as Southeast Turf & Ornamental Specialist, Auburn Alabama. Jacobi is a recent graduate of Auburn University.

In his new position, Jacobi will be responsible for the commercial development and sales support of ISK Biosciences turf & ornamental products and experimental compounds in the Southeast. He reports to Dr. M. Howard Thomas, North America Commercial Development Manager.

Jacobi holds a Bachelor of Science degree in Forestry from the University of Vermont, a Master of Science degree in

Forest Pathology from Clemson University, and a Ph.D. in Plant Pathology from Auburn University. He will continue to reside in Auburn, Alabama with his wife Dora.

ISK Biosciences Corporation is a manufacturer and marketer of a variety of agricultural and specialty chemical products. ISK Biosciences agricultural products are designed to help provide a bountiful and high-quality food supply by protecting agricultural crops from weed and fungal pests which can threaten food supplies. Products from the Turf & Specialty Products Division help to protect turf grasses and ornamentals from a variety of weeds and diseases. The Industrial Biocides division researches, develops, and distributes products for the coatings and wood preservation industries. These products, as well as other ISK Biosciences formulations, are developed and tested for effective performance.

Headquartered in Mentor, Ohio, ISK Biosciences Corporation has areas offices around the world, as well as manufacturing facilities near Houston, Texas.

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O.G.S.A. BULL

Toronto Area Superintendents 1995 Event Schedule

- | | |
|--|--------------------|
| July 24 - Oshawa G.C. | Host: Ian Bowen |
| 12:30 lunch and meeting at clubhouse | |
| August - Beacon Hall G.C. | Host: Bob Heron |
| Details to be confirmed | |
| Sept. 18 - North Halton G.C. | Host: Alan Beeney |
| 12:00 lunch and meeting at maintenance facility | |
| Golf for 16-20 available to members only following meeting | |
| October - York Downs G.C. | Host: Al Schwemler |
| Details to be confirmed | |

OVTA GOLF DAYS

Excutive Day
Hammond Golf Club
Hammond, Ont.
July 31

Fall Field Day
Hylands Golf Club
Ottawa, Ont.
September 18

O.V.T.A. Office
(613) 591-1736

Georgian Bay Days

Contact Randy Fielder
(705) 835-3125

Deer Creek Estates
Whitby, Ont.
Host Neil Acton
July 25 {limited space}

Parry Sound Golf Club
Parry Sound, Ont.
Host Don Norris
August 22

Monterra Golf Club
Collingwood, Ont.
Host Ron Heesen
September 26

OGSA GOLF DAY

Green Chairman/Super
Rosedale Golf Club
Toronto, Ont.
July 17

OMAFRA
Springfield Golf Club
Guelph, Ont.
August 14

WOGSA GOLF DAYS

Golf Club TBA
Hamilton, Ont.
Host David Smith
July

Ingersoll Golf Club
Ingersoll, Ont.
Host Dan Lavis
August 24

Lookout Point Golf Club
Host: Aldo Bortolon
October 4

LETIN BOARD

NEW BUSINESS TOOL FOR HORTICULTURAL MANAGERS AND SUPERVISORS

Guelph, Ontario - The Ontario Horticultural Human Resource Council has released an Employers' Handbook for owners, managers and supervisors in the horticulture industry.

"The Employers Handbook offers positive support to operators who find that their farm business plan requires them to be employers," says Ken Forth, Chair of the Human Resource Committee for the Ontario Fruit & Vegetable Growers' Association. "There is a lot more to workforce management than being aware of the worker's welfare. A successful operation also need the right number of competent people with skills, abilities, knowledge and experience that fits with the farm plan."

David Ward, a Waterloo Arborist who was one of several horticultural industry representatives involved in the production of the Handbook, recognizes the special needs of small business operators. "In most cases horticulturists enter the industry with a lot of good technical skills", Ward said, "as they build their business, they find managing people takes up most of their time and effort. The Employers' Handbook fills an important void in providing them with the information they need to effectively and efficiently manage their people."

The Employers' Handbook consists of 5 booklets, each containing practical information, examples and exercises employers can use to assess their own human resource management skills. The books cover a variety of topics; personnel planning and regulations; hiring; supervision; training, motivating and evaluating; communications, problem solving and discipline. The Employers' Handbook can be ordered from the OHHRC office, the field offices of the Ontario Ministry of Agriculture, food and Rural Affairs, or from Agricultural Employment Service (AES) offices.

For further information contact OHHRC Director, Rob Witherspoon at (519)824-4120 extension 4208 or Fax (519)824-9813.

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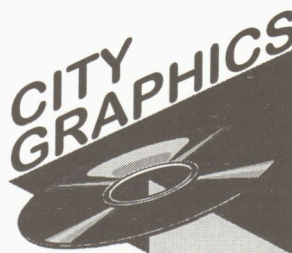
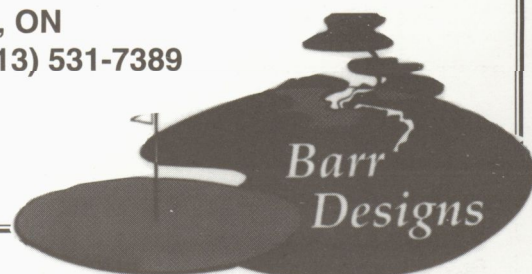
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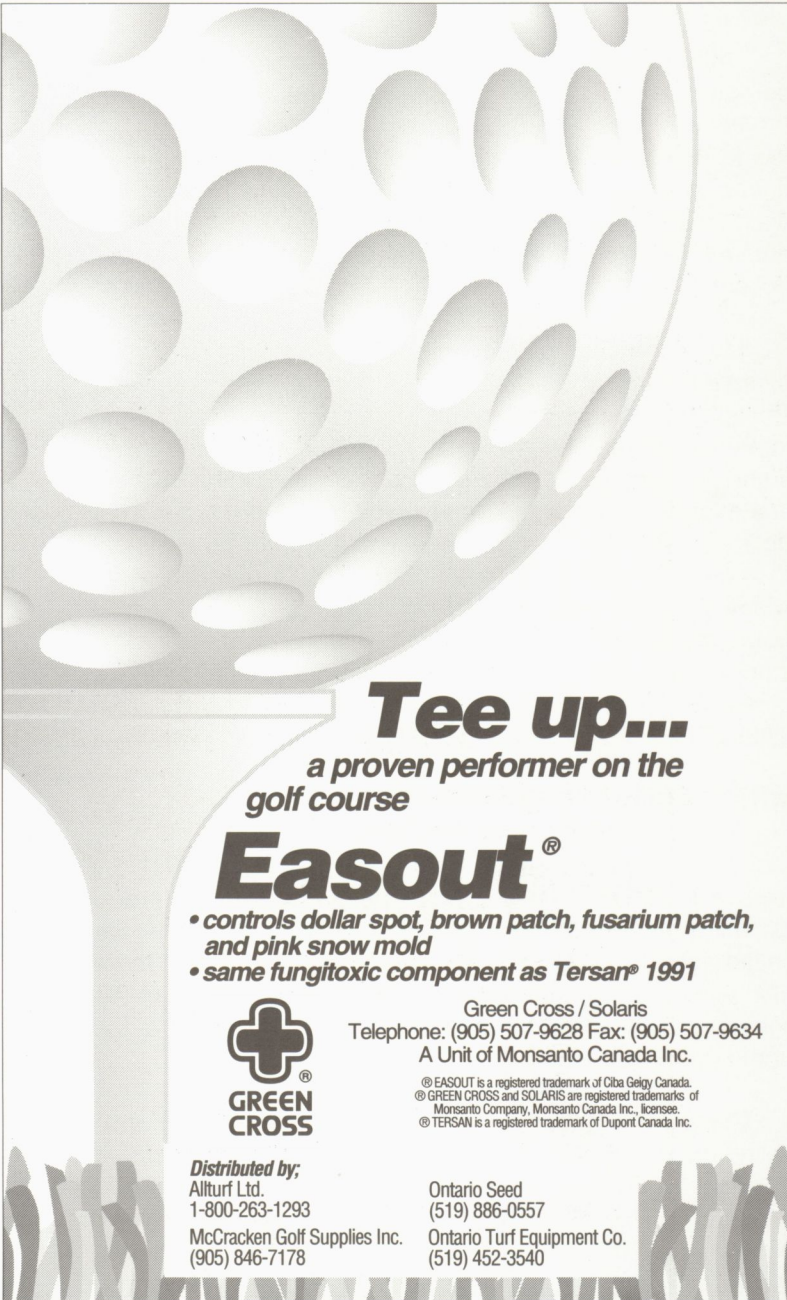
When Ontario Seed Company and Nutrite Fertilizer Co. team up they manage to put together a great show. Last winter it was the Seminars at Dundee G.C. and this past June 27 it was the golf day at Forest City National in London. Forest City will be hosting the C.P.G.A. Pros this summer and they are in for a real treat. The course is spread out over rolling terrain with thick stands of mature trees. The trees are located far enough from play to allow some room for error but close enough to force one to negotiate the ball into advantageous positions for the following shot. Between the forest and fairway in many places is a belt of tall fescue and red clover providing a colourful frame to about fifteen yards of well kept rough. The greens are rolling, quick, true and, on this day, held very well. Not a big surprise after two days of rainy weather which dumped over three inches of water onto the course. Hats off to Phil Brown, the Superintendent, who has done a marvelous job through a month of unseasonably hot and dry conditions. I don't think anyone minded the possibility of getting wet (which didn't happen) and were hoping that the course at home was stretched out under an easy blanket of rain.

The prize table was groaning under the weight of booty generously donated by Agrevo, Bayco, The Brick Brewery, ISK Biosciences, Nutrite, OSC and Sustain. Bruce Burger of Lakeview Golf Club won the bronze coloured trophy of a golfer with score card; a club under his arm. Bruce's 77 allowed him to win this event for the second time in it's seven year history.

Previously this gesture of appreciation towards the customer was conducted at different venues, at different dates throughout the province. This required the hosts to take numerous days away from their busy schedules and not all company representatives could be on hand to express their appreciation to all different regions. It appears that this new arrangement will be followed in the future and hopefully the central location of Forest City National will be available again.



O.S.C.'s Tami Packham with Superintendent Phil Brown



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INFRARED ONE MORE MANAGEMENT TOOL FOR THE SUPERINTENDENT

By ADRIEN GALLANT P.Ag.

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SUPERINTENDENTS are now witnessing the development of a new and exciting management tool called DIGITALLY ENHANCED INFRARED REMOTE SENSING.

This imaging technology, which measures the level of photosynthesis, will have major implications for turfgrass management everywhere. The technology will give the turfgrass industry the ability to detect very early signs of stress making it a valuable pest monitoring tool.

Although Infrared Remote Sensing is not new, the computerized digital enhancement of the image is. This technology was first developed during the early part of World War II to detect camouflage from regular vegetation. It was later found to have many other peaceful applications such as agricultural and forestry assessment, border patrol, archeological research, blood analysis and exposing forged documents.

My first encounter with infrared photography happened nine years ago when Dr. Larry Sanders of The Potash and Phosphate Institute invited me to join him for an excursion in a small Cessna aircraft to do some aerial photography of some research plots. Although this was going to be my very first experience in such a small plane, I put up a brave front until I realized that the passenger door would be removed to improve visibility. My friend needed me to take coloured slides while he took infrared photographs. After about an hour, the plane and I landed in unison. When we later compared our shots, I was amazed at how much detail we could see on the infrared prints compared to the colour slides. This science has come a long way in nine years.

WHAT IS INFRARED IMAGING?

Infrared imaging is the recording of images formed by radiation. A stressed plant will therefore appear differently from a healthy plant because the amount of reflected radiation is different. The visible portions of radiation are called light. In addition to the light that we can see, there also exists the invisible radiation found at both ends of the light spectrum. At the lower end is the ultra violet and at the upper end, the infrared.

The electromagnetic wavelengths are measured in units called nanometres. A nanometre measures one millionth of a millimetre. The human eye sees only 8 to 12 percent of the total reflected radiation. Infrared provides almost ten times more information because it is measuring from a much larger column. If human beings could see all of the



reflected radiation, the grass would not be green, it would be red! Green is not a basic colour; the reason we only see green is that our eyes see more green than red or blue. Because infrared is invisible, special film and techniques are required to form the images.

There are two methods by which infrared images can be taken. The most common method is with 35 or 70-millimetre film. In this case, one uses an ordinary camera with special infrared film that is responsive to the colours green, red and near-infrared. The film is then processed at a special laboratory and then digitized and fed into a computer for analysis. The drawback to using this method is the time required to have the film developed. Very few labs develop this type of film anymore which means that you may have to wait several days for the results.

A more recent method involves using video type equipment that immediately digitizes the images for analysis. Using this method, results are available almost immediately. The only disadvantage to this second method is that the amount of resolution is less than with film. This does not present a problem for stress surveillance, however, for certain jobs like mapping out drainage patterns for example, the film method is preferred.

ROCHESTER, NEW YORK - THE WORLD CENTRE FOR IMAGING AND OPTICS

If anything is happening in the imaging world, it is happening in Rochester, New York.

The Institute of Optics at the University of Rochester was founded in 1929 and is one of only a few institutions granting Masters and Ph.D. degrees in optics. The Centre for Imaging Science at the Rochester Institute of Technology (R.I.T.), provides undergraduate and graduate studies and conducts research on the application of physics, computer science, chemistry and mathematics to the formation, recording and perception of images.

Large corporations such as the Eastman Kodak

INFRARED ONE MORE MANAGEMENT TOOL FOR THE SUPERINTENDENT

Company and Xerox Corporation conduct research and development in Rochester. In addition to the large corporations, Rochester also has over seventy smaller optics and imaging firms conducting research and business in the area.

One of these firms is Pegasus Environmental Limited, from Spencerport, New York. The driving force behind this company is a seasoned pilot by the name of Zeke Hurd. He flies a specially equipped aircraft called Helio Courier. This aircraft is powered by a 250-horsepower single engine. It cruises at a speed of 150 miles per hour and has a slow flight of as low as 28 miles an hour. Because of the many unique features like unusually large wings, this remarkable aircraft can actually hover with a bit of head wind. The cameras are mounted in the belly of the aircraft just behind the cockpit seat. This makes it ideal for aerial photography.

Hurd first used infrared on his 1,000-acre farm and apple orchard in the early 1980's for early detection of fireblight, apple scab and nutritional deficiencies in his orchard. This management tool worked very well for him in predicting in advance, the areas of the orchard that would give problems down the road. Although Hurd could make accurate predictions on his own farm, he didn't feel comfortable making predictions on someone else's orchard because the system was not yet calibrated and standardized.

At that time, Hurd was introduced to Dr. John Schott, professor of Imaging Science, Rochester Institute of Technology. Dr. Schott was pioneering the process called "Digitally Enhanced Remote Sensing".

"This technology allowed us to let the computer do the digital analysis of the images. If, for example, we look at different shades of pink colour from say 1 to 100, the human eye can easily tell the difference between a 10 and a 50, but not between a 1 and a 2," says Hurd.

"The subtle differences can now be picked up and enhanced by the computer. The infrared image is picking up differences in photosynthesis. Anything that adversely affects photosynthesis like nutrient deficiency, insect damage, diseases, compaction, etc., will show up on the image long before it can be detected by the human eye. What we are able to do with this technology is diagnostic surveillance. We cannot ascertain the cause of the stress, but we can indicate the location of the stress. This can greatly improve the efficiency of the ground scouts because they now know exactly where to look," adds Hurd.

Infrared is now used to monitor grape crops for powdery

mildew and black rot, fireblight and scab in apple orchards and early blight in potatoes.

IMPLICATION FOR GOLF COURSE MANAGEMENT

Hurd recognized the implications of using this tool on turfgrass several years ago when he was studying Turf Management at Cornell University. "I brought this concept to Dr. Eric Nelson, Cornell's leading turfgrass pathologist," says Hurd. Dr. Nelson was interested enough to travel to Rochester to meet with Dr. John Schott at R.I.T. A major step forward came when Dr. Nelson offered to give whatever support was necessary from the ground to correlate the causes of stress and aerial images.

Cornell University was already doing regular scouting at a number of area golf courses anyway and now they could verify what the image was seeing. Interpreting turfgrass images from a golf course is far more intricate than dealing with a homogeneous agricultural crop such as potatoes. Greens must be separated out and calibrated against each other. Compared to fairways, all greens appear stressed.

Of all the turf areas on a golf course, the roughs always appear the healthiest. Greens can be separated out and the image enhanced and calibrated so that differences can become apparent. An individual green can also be enlarged to show the location of stress.

SUPERINTENDENTS VERY SUPPORTIVE

Zeke Hurd contacted a number of Rochester area superintendents and asked them if infrared imaging is a tool that they could use to better manage their turf and the answer was yes. Among superintendents who have used infrared in the Rochester area are Joe Hahn, CGCS at Oak Hill CC, Rod Karchner, CGCS at Locust Hill CC and Robert Feindt at the Country Club of Rochester. Says Hahn, "I have been very interested and enthusiastic about Infrared Imaging ever since Zeke first introduced me to the concept about five years ago. The technology has improved tremendously since that time. The environmental benefits along with the economical impact make me confident that in a very short time, this technology will become an everyday practise." Joe Hahn is host of the 1995 Ryder Cup International Tournament.



INFRARED ONE MORE MANAGEMENT TOOL FOR THE SUPERINTENDENT

Hurd then presented his concept to a number of superintendents at the Anaheim, California Superintendent Trade Show in 1993 and received enthusiastic support. In November 1993, he made a similar presentation to the New York State Turfgrass Association and received a great deal of interest. More recently, during November of 1994, Hurd presented his concept to a group of Canadian turfgrass professionals held at the Dundee CC, New Dundee, Ont.

BENEFITS FOR THE GOLF COURSE

Infrared Imaging is a tool that will assist turf managers in managing resources more effectively. By seeing the whole picture, one can get an idea of the magnitude of a stress situation before it becomes a major problem.

As one examines the images, certain colour stress patterns start to become evident. For example, stress from compaction will show a different colour pattern than stress from disease.

Aerial mapping of the turfgrass condition by infrared and computer based analysis can give a good perspective of the extent of a problem. Is the problem localized to one green, or systemic problem over the whole course?

This would allow treatment to be applied only in areas where it is found to be needed thus saving costs and reducing environmental impact. Timing and threshold identification will also be beneficial. This technology is also used for planning drainage and irrigation systems. Superintendents will use the science to more effectively communicate the magnitude of a given problem to their respective greens committees.

THE FUTURE LOOKS EXCITING

"I think this technology will prove to be useful in monitoring pest problems and stresses on golf course turf. There is still a tremendous amount of verification of spectra with ground problems before the technology will gain wide acceptance. The future of this is exciting though," says Cornell University plant pathologist, Dr. Eric Nelson. "Infrared will enhance our use of Integrated Pest Management (I.P.M.) and provide us with hard physical data regarding why we had to spray on a given day, for a particular pest. It will give us an effective tool in legal cases and allow us to apply smaller doses of pesticide to weaker stages of the target pests" says Alex La Belle, CGSA Master Superintendent, Merry-Hill GC, Breslau, Ont.

"We are optimistic about the future although we cannot

be too specific on what identifications this technology will bring. We expect to be able to work with 240 spectra bands in the next five years. This means that we are increasing our opportunity for stress identification eighty fold. There will be more advances as we see continued cooperation between the imaging world and the turfgrass science. At Pegasus Environmental, we want to be that glue that keeps the two sciences together," adds Hurd.

With more advances in this imaging science, infrared photography could become a valuable tool to complement I.P.M. programs. It is conceivable that in the future it will become as common a tool as the profession takes a giant step into the 21st century.

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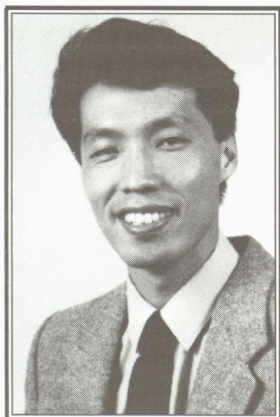
PUBLIC RELATIONS COMMITTEE

By Keith Bartlett

The OGSA Board of Directors has identified the need to strengthen the orientation of new members into our Association. We have created a new committee known as the Public Relations Committee. The primary function of this committee is to provide new members with more information about the OGSA when they join. The Board of Directors believes it is very important for new members to become familiar with this association and the many benefits and responsibilities associated with being a member of the OGSA.

It is vital that new members do not feel alienated once they have joined. A new member who feels welcome will quickly learn the importance of the communication and information opportunities available from the OGSA. He/She will promote and achieve the professional image that we all strive for.

In the future, this committee may undertake more responsibilities to better serve its' members' needs. We would appreciate any suggestions you may have, please feel free to contact Mr. Jerry Richard at Oxford Golf Club - (519) 462-2910 or Mr. Keith Bartlett at Thornhill Country Club - (905) 889-2735.



TAKE-ALL PATCH by Dr. Tom Hsiang

History: Take-All Patch as a severe disease of bentgrass turf was first reported in Holland in the 1930's. In North America, it confirmed on bentgrass in 1960 in the Pacific Northwest. In the Great Lakes area, the first confirmed report on bentgrass was made in the mid-1970's. In Canada, the first reports were

from south-western Ontario in the mid-1980's. Since that time, positive identification Take-All Patch has been made in southern British Columbia and other parts of southern Ontario. Newly built bentgrass putting greens seem to be most susceptible to the disease, and with a recent increase in greens construction, many more cases of Take-All Patch have been reported. The fungus causing Take-All Patch also causes a severe disease of cereals, and can also be found in cereal growing areas.

Other Common Names: Ophiobolus patch, Gaeumannomyces patch.

Pathogen: Gaeumannomyces graminis

Host Plant: Creeping bentgrass

Season of Occurrence: Spring and fall, with symptoms enhanced by summer stress.

Conditions Favouring Disease: Cool moist soils

- Drought stress in summer.
- Poorly drained irrigated turfs.
- Soil pH must be >6.5 for disease to occur. Sand with high carbonate content will have higher pH, and liming will also raise pH.
- Most common 1-3 years after turf establishment, but after that it sometimes will decline.

Symptoms: New infection centres occur on greens in late spring. They are initially depressed circular patches, a few cm across, resembling Fusarium patch. These eventually may expand up to 1m in diameter over several years with light straw to bronze colour.

- Symptoms may first occur in spring and are more severe with drought stress, particularly in late summer.
- In the summer, patches may look similar to brown patch but without a smoke ring.
- Resistant grasses or weeds can grow in the centre of patches giving a frog-eye appearance.
- The fungus causes root disease, and may act by plugging up the roots and causing wilt and death.
- On dead leaves of CB, there is tip dieback only, with no

lesions, mycelium nor spore-producing structures.

- Infested roots will be dark brown, whereas healthy roots are ivory white. Look for dark roots in top 3 cm of soil.

- Dark runner hyphae can be found on roots.
- In advanced stages, turf is easily pulled from the soil due to the root rotting.
- Patches can persist through winter or can reappear annually in the same spot, enlarging by 15 cm every year. Small black fruiting structures which have a beaker shape can form during autumn on plant crowns. The neck of the beaker protrudes through the dead tissue and can be seen with a 10X hand lens.

Life Cycle: The fungus survives winter and adverse conditions as mycelium in dead tissue in the soil and thatch.

- Activity starts in cool wet weather, but symptoms usually are not seen until warmer drier weather.
- Initial infections occur on roots and crowns, and the fungus spreads along root surfaces to adjacent plants. In fall, cool moist conditions allow fungus to grow and infect more turf.

Cultural Control: Control is difficult.

- Promote good rooting, such as by delaying spring fertilization until a month after first growth, controlling thatch to promote plant vigour, or aerifying in spring and fall.
- Adequate amounts of the micronutrients Mn, Mg and Zn and the macronutrient K may decrease Take-All Patch.
- Fertilizing with ammonium fertilizers may decrease pH and inhibit disease. Ammonium sulphate can be applied at a rate of .2-.3 kg N/100m² per season. Overseeding or resodding patches with resistant turfgrasses.

Chemical Control: No chemicals are registered for Take-All Patch disease in turf in Canada, and none of the currently registered fungicides on turf are known to be consistently effective. Consult provincial publications for recommendations.

Resistant Turfgrasses: Grasses other than creeping bentgrass are much more resistant to Take-All Patch disease. No resistant cultivars of creeping bentgrass are known.

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OGSA/GTI and OMAFRA Summer Field Day

With the changes to the OGSA tournament schedule in 1995, the Spring Field Day usually held in late May, will take place on August 14/95 at the G.T.I. and the Springfield Golf and Country Club in Guelph. We have combined with the O.M.A.F.R.A. Field Day to hopefully create a more informative and enjoyable day.

The agenda will include a morning tour of the G.T.I., lunch, golf, dinner, and prizes. We are aware that this will make for a long day, so we have included power carts in the package to speed things along.

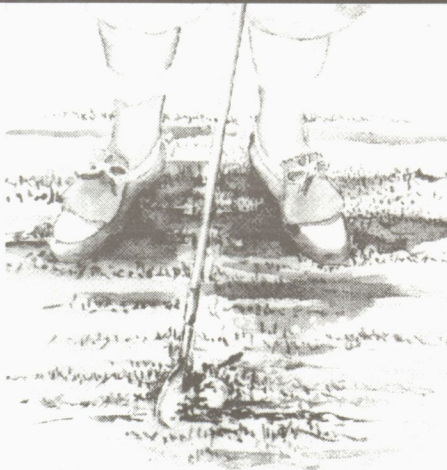
There should be plenty to see at the G.T.I. in August. Spring tours have not always yielded a great deal because of the time of year, however everything should be in full swing on the 14th. Details of the tour will be included in the entry form.

Superintendent Ray Duke will host the afternoon event, a 1:00 P.M. shotgun tournament, 5 miles down the road at the Springfield Golf and Country Club. Springfield, which opened in June of 1990, boasts a tight and watery layout. While it's length will not break the golfer's back, Architect John Robinson placed water on 10 out of 18 holes, so it will be accuracy that gets you up to the prize table early.

The OGSA Field Day has always been a popular event amongst our industry people. Register early as the field will be limited.

by Jerry Richard

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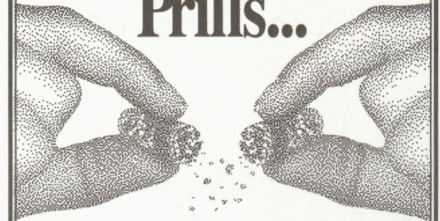
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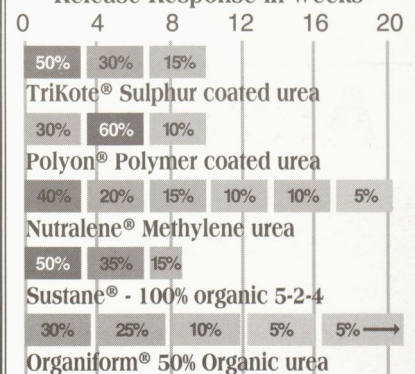
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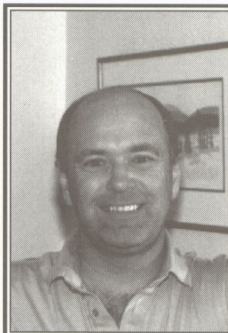


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Nugro Golf Day at Heron Point

by Alex La Belle



It was the hottest day of the year at 34 degrees celcius with a humidex reading that look it to 45. If it had not been for the steady breeze I'm sure many would not have finished the eighteen holes. Such as it was every one survived to tell stories of their exploits on one of the finest golf courses that I have played. Every hole at Heron Point is a picture hole. You could make a calander of each one and have six left over.

The day started with a long drive demonstration given by Mike Martz. Mike holds the American long drive record at 352 yards and has benefited from the tutiledge of Moe Norman. The range was open until tee off time to hit as many balls as needed and I certainly took advantage of Mr. Martz's instructional demonstration to try to improve my chances on this demanding course. Alas, I left it on the range. Many others did not and their names follow.

Low Gross	Randy Booker	74
Low Net	John Piccolo	61
Low Team	Stu Mills	
	Ron Mac Eachrin	51
	Simon Medhurst	
Longest Drive	Randy Booker	
Closest to the Pin	Greg Aljoe	

After the game we were updated by Mark Scenna on the newest requirements regarding chemical use, storage and monitoring. The fifteen minute session was very professionally delivered and informative.

Nugro saw to every contingency and the course conditions showed the hand of a very talented and concered Superintendent in the person of Mike Burton.

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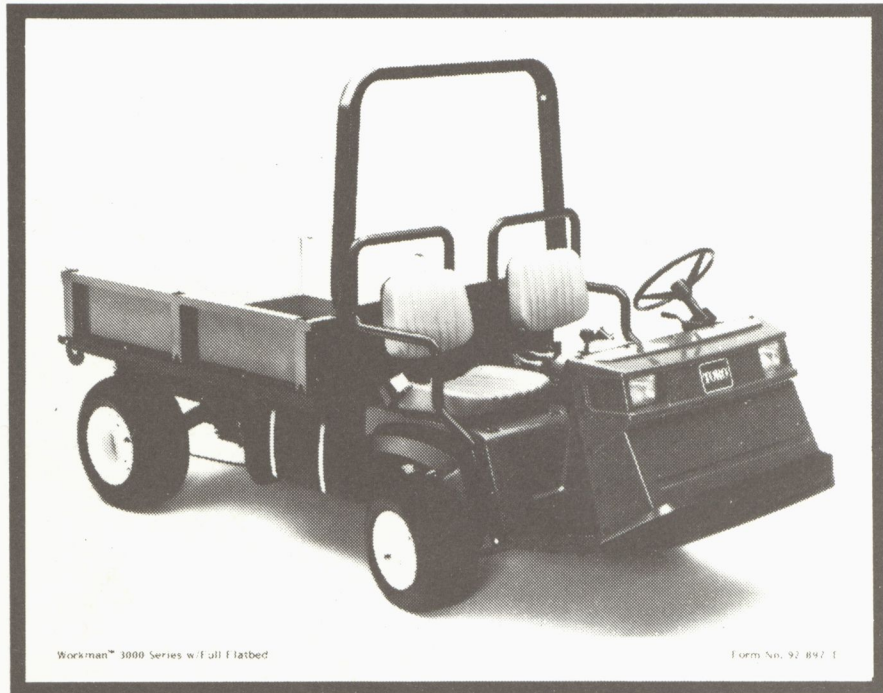
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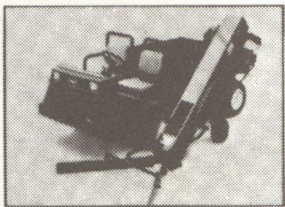
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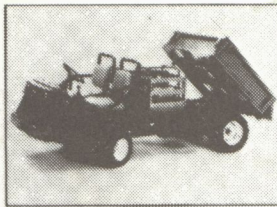
Workman™ 3000 Series w/ Full Flatbed

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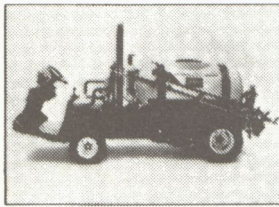
Versatile Capacity



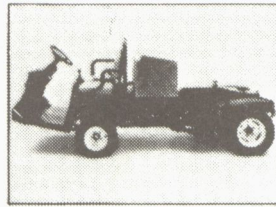
Cushman® Attachment Compatibility (Full-Bed)



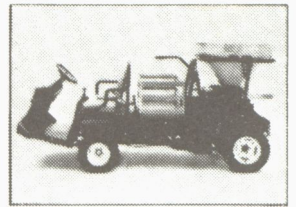
Full or Split Bed System



757 liters (200 gal.) Low Profile Sprayer



5th Wheel Capability



Spreaders and Topdressers

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