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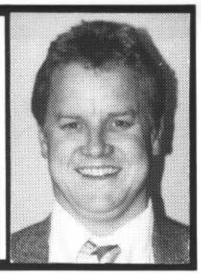
TEE TALK

By
Scott Turtinen
Executive Director, MGCSA



Thank you to Patty Knaggs and her staff and to Hazeltine pro Mike Schultz and his staff for all of their help during our 1994 Stodola Scramble in September.

I heard quite a few stories of how long Hazeltine was playing with its normal length and wet grounds. On the 17th hole 116 players entered the raffle for the 27″ TV. Forty-five players hit their shots on the green.

Dean Spencer of Edinburgh USA was the lucky person to win the TV drawing.

* * * *

On November 12 the MGCSA will have a family outing at Knott's Camp Snoopy. The camp is a seven-acre indoor theme park in the heart of Mall of America. It features 50 rides, attractions and venues for everyone of all ages.

* * * *

If you have paid your 1994 dues but have not received your membership card, call our office and I will look into the matter.

* * * *

Information and registration material for Superintendents about The Greater Minnesota Turf and Grounds Conference Show, being conducted in conjunction with the 67th Minnesota Golf Course Superintendents' Association Annual Meeting, will be mailed in mid-October.

Vendor booth information has been mailed.

The Conference will take place at the Minneapolis Convention Center December 7-8-9.

* * * *

Our next meeting will be at Minneapolis Golf Club on October 10. I hope all of you can attend. On behalf of the MGCSA, I would like to thank our host clubs—past and future—for providing a great day of enjoyment and professionalism for our association.

* * * *

Hopes for a full and speedy recovery go out to Tim Commers of Cushman Motors. Tim was involved in a motorcycle accident in Brainerd.

* * * *

Belated congratulations to Tom Kientzle, CGCS, head golf course superintendent at The Pines at Grand View Lodge.

He recorded his second hole-in-one when he aced the 143-yard 17th hole at Willingers with a 7-iron, the day before the Garske Scholarship Scramble was held at Rochester.

Previously Tom had a hole-in-one on May 21, 1985 at Birch Bay.

* * * *

We are always looking for member-generated articles for *Hole Notes.* If you have had something happen at your course that you think might be helpful to other superintendents, why not tell them about it through your magazine?

If you are concerned about writing a story, just give us the facts and we'll put the words together.

Some of the facts listed here can assist you in preparing information:

1. Name of the project
2. Purpose
3. Date(s)
4. Time start and finish
5. Location of project
6. Person/s in charge
7. Other key people
8. Pertinent quotes by key person(s)
9. Description of activity, accomplishment, etc.
10. What was accomplished or how being accomplished
11. Other unusual information about activity or person involved.
12. Anything else you consider important.

Photographs, of course, will enhance the story, but please do not send slides.

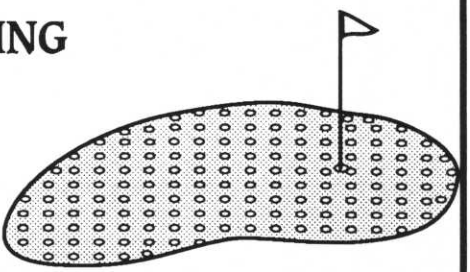
Send your material to *Hole Notes*, P.O. Box 617, Wayzata, MN 55391.

Jerry McCann

A (W)HOLE IN ONE

One-stop shopping for golf course materials

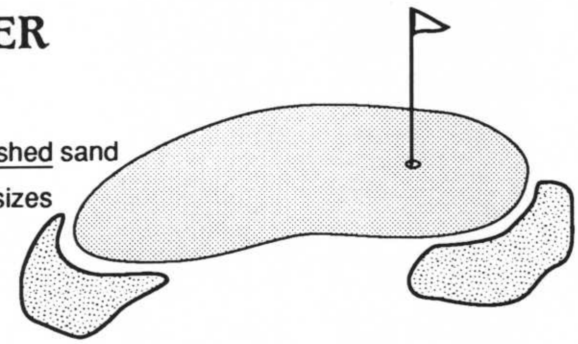
TOPDRESSING MATERIAL



- 80/20, 70/30, or mix to order
- Sand screened with 1mm screen (USGA spec)
- Product blended then rescreened through 3mm screen to assure clean mix

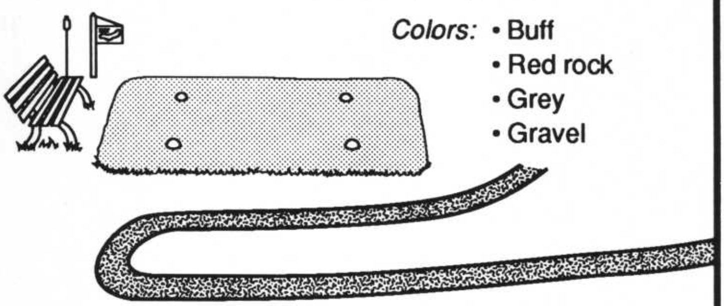
All specs available upon request

BUNKER SAND



- Clean, washed sand
- 2 particle sizes to choose from

CARTPATH AGGREGATE

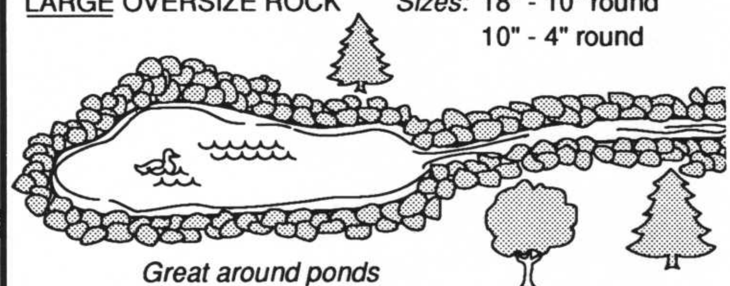


Colors:
- Buff
- Red rock
- Grey
- Gravel

RIP RAP

LARGE OVERSIZE ROCK

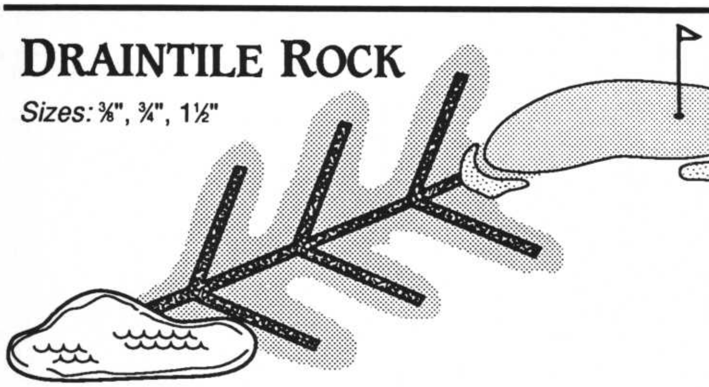
Sizes: 18" - 10" round
10" - 4" round



Great around ponds

DRAINTILE ROCK

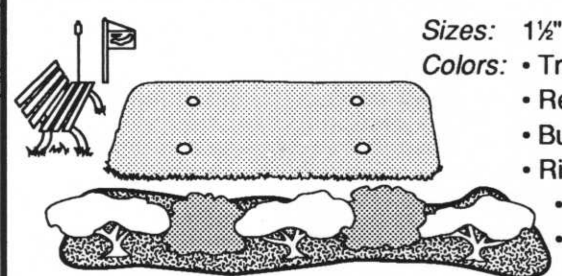
Sizes: ⅜", ¾", 1½"



DECORATIVE ROCK

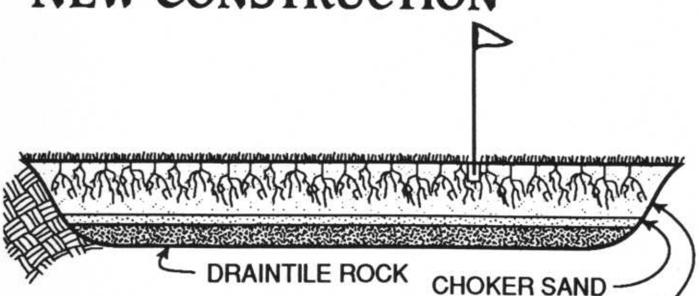
Sizes: 1½" or ¾"

Colors:
- Trap rock
- Red rock
- Buff limestone
- River rock
  - Granite
  - Salt & pepper



For landscaping

NEW CONSTRUCTION



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Making Turf Diagnosis Easier

The Plant and Pest Diagnostic Clinic (PPDC) at Ohio State University recently published this list of the top 10 factors you should include when writing or calling a college or university about a turf problem:

1. List all symptoms. Describe the general appearance of the turf. Does it look water-logged, dried or scorched? Have any patterns or color changes occurred? A clear color photograph is the best visual aid.

2. Pattern of development. Does the problem appear in full sun or shade? Do the affected areas occur near irrigation lines, high traffic areas, sidewalks or buildings? Does it occur in low, moist places?

3. Amount of turf affected. How much of the lawn, green or field is affected? Do lawns nearby show similar symptoms?

4. Crop. Please list grass varieties planted, so consultants can determine which grass is more affected by the pathogens.

5. Seeding date. Was the lawn seeded or sodded recently, or is it a mature lawn?

6. Time of infection. When did symptoms first appear? What were the weather conditions prior to symptoms? Did the condition worsen coincidentally with an environmental or cultural change?

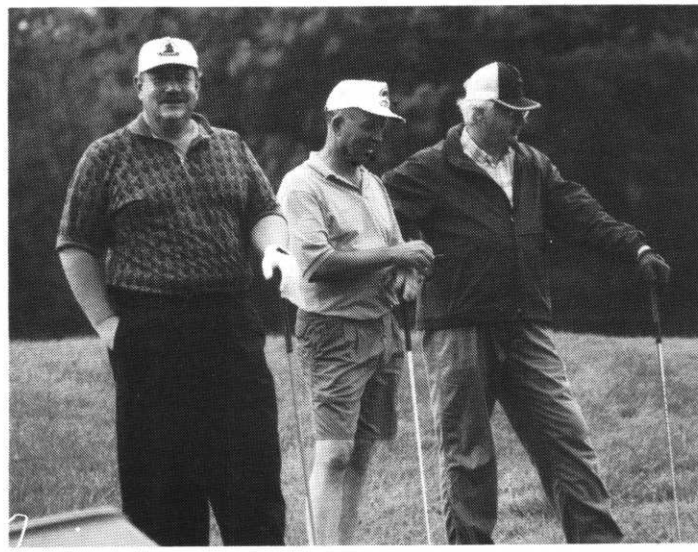
7. Treatments. When, at what rate, and what chemicals or fertilizers were applied? Was the grass irrigated before or after treatment? Send any samples of turf before fungicide applications were made. Fungicides prevent or impair culturing results.

8. Irrigation. Specify frequency, amount and time of day that irrigation is applied, if any.

9. Cultural practices. Was the turf aerated or topdressed? When? Did the problem occur afterward? How long afterward?

10. Environment. What amendments have been added to the soil? Include the results of recent soil tests, if applicable.

—Landscape Management



The Tartan Park Group of Steve Conway, Joe Moris and Dr. Ward Stienstra.

U of M Update —

(Continued from Page 16)

such as water use and conservation in the landscape. According to a recent article by Dr. James Beard and Dr. Robert Green*, our turfgrasses are and should remain a vital if not essential part of our urban landscapes, not to the exclusion of trees and shrubs but in coexistence with them. Following is a brief summary and adaption of the water conservation section of that paper as it appeared in the *Journal of Environmental Quality,* May-June 1994.

Proponents of xeriscaping as well as others have often encouraged reduction of turfgrass areas while increasing the use of trees and shrubs as a means of conserving water in urban areas. However, if one were to look for scientific data to support that view, you would find the reference shelf empty. In fact, from the limited research that is available, the opposite position would likely be supported. That is, our turfgrasses may be more effective water conservers than our trees and shrubs.

One basis for evaluating their ability to conserve water is to study their evapotranspiration (ET) rates. Remember, ET is the measure of water lost through evaporation and transpiration through the plant. Very few tree and shrub species and cultivars have been examined for their ET rates while many of our turfgrass species and cultivars have been evaluated. Comparing those ET studies that are available, trees and shrubs are typically found to be greater water users than our turfgrasses on a per unit land area basis. It should also be noted that the major world grasslands are located in semi-arid regions, while forests are located in areas of higher rainfall. Minnesota is a good state to observe this phenomena as you travel from the Arrowhead region in the northeast at the more arid southwest corner.

Many plants mentioned on low water use lists are based on the inaccurate assumption that survival in arid landscapes equates to low water use rather than their being only drought resistant. These same species placed under an irrigated urban landscape often become high water users. This results from the fact that the plant mechanisms for dealing with ET and drought resistance are distinctly different. Results from research in Texas have found a number of turfgrass genotypes capable of withstanding and remaining green 158 days without irrigation under hot summer conditions through dehydration and avoidance. At this time, similar detailed studies of dehydration avoidance and drought resistance among trees and shrubs is lacking.

Many turfgrass species will naturally "harden off" or acclimate to the warm dry conditions of summer by ceasing growth, becoming dormant and turning brown until adequate rainfall returns. Research has shown that these properly conditioned turfgrasses will recover and turn green once watering is resumed and/or ample rainfall returns. If conserving water is desired, then a dormant turf will use little water while many of our trees and shrubs continue to remove water from greater soil depths. (Note: Also, many of the trees and shrubs around the Twin Cities have been dropping both green and yellow leaves this year as a means of conserving moisture and adjusting to the drier conditions.)

While seeking lower ET rates, we must also consider the total impact of this on our urban ecosystems. As urban areas are already significantly warmer than adjacent outstate areas, lowering ET rates lessens the transpirational cooling and increases the heat load in urban areas, thus increasing the need for greater mechanical air conditioning requirements. For example, a turf in a dormant condition is going to be warmer than one receiving ample water to sustain growth and remain green. Therefore, when comparing the costs and supply of water with energy, it may be more prudent *not* to strive for the lowest possible water use in lawns and landscapes. Comprehensive research that considers the effects on all the urban landscape components is still needed to assist in the development of prudent and cost effective urban water conservation strategies.

Presently, valid scientific information supporting the use of trees and shrubs instead of turfgrasses for water conservation strategies does not exist. Improper watering practices and poor landscape planning are more often to blame than any one group of plant materials for water being wasted in the landscape. Rather, the right plant and combinations of plants for the right design and the right place in water conservative landscapes will be much more effective than singling out particular plant materials to be excluded from the landscape. Trees, shrubs and lawngrasses all have a place in maintaining the plant diversity of our urban landscapes. It is important that we not lose the positive environmental benefits that each group of plant materials can contribute to an aesthetically pleasing and environmentally beneficial urban landscape.

*Summarized and adapted from: Beard, J.L. and Green, R.L., *The Role of Turfgrasses in Environmental Protection and Their Benefits to Humans.* Journal of Environmental Quality, 23:452-460 May-June 1994.

Making a Point About Change

Having trouble persuading your staff that incremental change is worth the effort—and that change doesn't have to be immediate, dramatic and sweeping?

If so, try this exercise suggested by Richard Ruhe, a consultant with Blanchard Training and Development:

Tell staff members to imagine they've just been told they have won a state lottery and they have one minute to choose between two payment methods:

- **$250,000** a day for 30 days.
- **One cent** the first day and double the amount each day for 30 days.

To make it easier for you: The first method totals $7.5 million, the second method totals, $10,737,128.23!

WHERE ARE THEY NOW?

Former St. Cloud CC Superintendent Cliff Vohs Now Lives in Yuma, Arizona

After spending 30 years at St. Cloud Country Club, former Golf Course Superintendent Clifford Vohs now enjoys the warmer climate of Yuma, Arizona.

But when the thermometer tops the 100° mark in the summer months, he also enjoys returning to Minnesota in July and August.

Cliff joined the MGCSA in 1951 and retired in 1976 after his lengthy service at St. Cloud.

He fondly remembers receiving the MGCSA's Achievement Award as the Golf Course Superintendent of the Year in 1960.

"Traveling, relaxing and being independent are the most enjoyable aspects of being retired," he said, "and I enjoy keeping in touch with my old friend Vern Hansen."

Cliff moved to Arizona in 1979. He and his wife Julie live at 2188 Javelina Avenue, Yuma, AZ 85364.

LOST CLUB

A
LYNX PREDATOR 4-IRON
was lost at one of the early spring meetings.

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1981 Mars Pull-type Sweeper

1960 Toro Spartan 5-Gang Pull Frame w/ 7 rubber tire gang units

1979 Turfco 31″ Meter-Matic Topdresser

Used Ryan Roll-Aire self-propelled drum roller w/ 5HP Briggs

Used Ryan Spike-Aire self-propelled spiker w/ 5HP Briggs

Like-new Bandy 45″ pull type drop seeder

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Stodola Research Tournament Wrap-Up

By Kevin Clunis
Stillwater Country Club

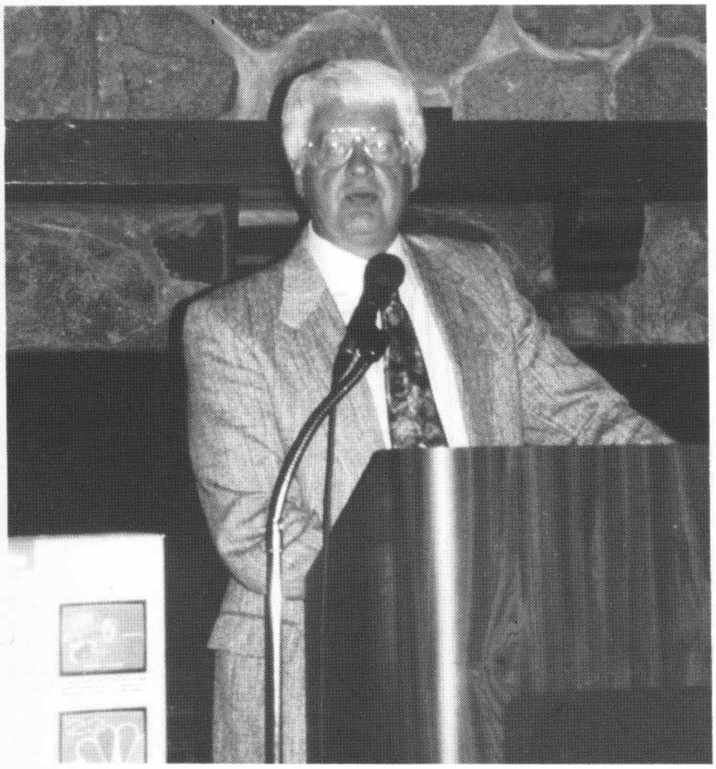
After an hour and a half lightning delay, the 10th Annual Harold Stodola Research Scramble Tournament began. This year's site was Hazeltine National Golf Club with host superintendent Patty Knaggs.

There were 36 "fortunate" foursomes teeing of in on-again, off-again rain showers. The field filled up quickly (4 days) after the notice was sent out. The committee is already looking at next year's registration process as to accommodate the needs of our members.

Behind any successful undertaking, there are many people who need to be recognized: Bill Cox, who did an outstanding job of securing the site and working with the Hazeltine staff on all the food and banquet set-up. Scott Turtinen, who helped with the scoring and registration. MTI's Tom Haberman and Plaisted Co.'s Steve Young, both of whom worked the "scam" games on the Par 3's number 8 and 17. Dr. Ward Stienstra, whose enlightening talk stirred table discussions. And a great big thank you to Tom Mundi, E-Z-Go for donating 40 golf cars for the participants to use.

Congratulations to all the winners and a thank you to all participants for making this golf tournament a huge success!

Host Superintendent Patty Knaggs of Hazeltine National Golf Club in Chaska.



Dr. Ward Stienstra enlightened the Stodola dinner audience with a gracious talk about research benefits.

Jim Nicol, CGCS claims the 20″ T.V.

Gas, loaded and ready for rain.

1994 Stodola Research Scramble
Hazeltine National Golf Club

RESULTS

B. Adams, S. Proshek, T. Severud, J. Pint	62 (61)
C. Reynolds, M. Kennedy, J. Huettl, A. Huettl	62 (61)
C. Tuthill, T. Kays, M. Parker, J. Liden	62 (56)
J. Gustafson, S. Dewar, B. Dubovich, R. Smith	63 (60)
D. Egeberg, C. Egeberg, P. Diegnau, D. Parske	63 (60)
J. Kimberly, J. Watkin, G. Moe, B. Hawley	63 (59)
R. Kolter, M. Gostomski, D. Cleveland, J. Leaf	64 (62)
R. Grannes, S. Nelson, R. Chido, R. Kieffer	64 (60)
D. Zimmer, K. Deason, J. Grandstrant, J. Hawkinson	66 (60)
J. Sinkel, S. Sanborn, D. Miller, L. Hanson	67 (61)
B. Koepp, B. Menton, R. Eggergluess, M. Nelson	67 (64)
D. Sime, J. Riches, L. Maanum, R. Minor	67 (61)
T. Kientzle, F. Boos, M. Ronnei, K. Cashman	68 (64)
K. Clunis, P. Parizino, B. Novak, T. Berggren	68 (65)
P. Knaggs, M. Grual, J. Mahoney, B. Leaf	68 (60)
T. Kasner, M. Saatzer, S. Larsons, S. Liestman	68 (64)
J. Nicol, L. Olson, T. Goodin, J. Dellis	69 (66)
C. Hasbrouck, B. McCann, J. Kane, J. McCann	69 (64)
J. Monson, J. Dressen, F. Dinkel, A. Lemke	69 (66)
C. Pooch, C. Korbol, J. Peloquin, R. Adams	69 (62)
K. Scott, N. Spitzig, D. Saxon, C. Hanson	70 (67)
J. Granholt, M. Paulson, J. Munger, D. Olsen	70 (63)
S. Austin, R. Merrill, D. Aspinwall, W. Kalina	70 (66)
J. Nylund, D. Krupp, K. Benson, G. Wenkstern	70 (64)
D. Wysocki, C. Evenstad, J. Ordahl, P. Green	70 (65)
M. Olson, B. Coggins, C. Surdy, D. Henry	70 (65)
M. Terveer, G. Newman, M. Malone, R. Inouye	71 (69)
C. Molinari, M. Callender, M. Morrisette, R. Hanson	71 (65)
T. Johnson, G. Norman, G. Johnson, J. Swanda	72 (68)
D. Caldwell, S. Pederson, D. Eide, J. Christiansen	72 (68)
K. Greeninger, M. Turnbull, D. Bryant, D. Dombrowski	73 (66)
B. Fredericks, S. Young, T. Plaised, T. Mundy, D. Carlson	73 (65)
R. Nelson, J. Anderson, B. Anderson, D. Corredato	74 (68)
J. Moris, S. Conway, W. Stienstra, D. Dumez	75 (66)
T. Fischer, D. Spencer, L. St. John, J. Umland	75 (65)
R. Allen, T. Clinch, J. Coderre, R. Linder	77 (68)

(Net scores in parenthesis)

Contact
Greg Hubbard
612-777-1436
or
Dick Grundstrom
612-770-3091

if you are interested in running for the MGCSA Board of Directors

Tissue Testing: Questions and Answers

By Keith Happ
Agronomist, Mid-Atlantic Region, USGA Green Section

Having the opportunity to monitor the cutting edge of technology in the golf course maintenance industry is an exciting part of the work of USGA agronomists. We are continually asked questions about new products and procedures, and we are among the first to see them in action. Unfortunately, not all questions have easy or direct answers. The question about the value and use of tissue testing falls into this category. Tissue testing is being performed more and more, and questions about this practice have grown more numerous and pointed. Following are some of the most often asked questions about tissue testing, along with some answers that provide a perspective on the potential value of this technology in the turfgrass industry.

In preparing these questions and responses, references were obtained through the Turfgrass Information File (TGIF), and university researchers throughout the country were interviewed for their views on this timely topic.

Question: What is tissue testing?

Answer: *Tissue testing* involves analysis of foliar tissue (grass clippings) for nutrient content, and should not be confused with *plant analysis,* which determines the elmental content of all the plant tissue (leaves and roots).

The goal of tissue testing is to better meet the nutritional needs of golf course turf. In theory, knowing the nutritional content of turfgrass tissue would allow the design of a more efficient fertility program to produce healthier and better quality turf. However, nutrient interactions occurring within the turfgrass plant (combined with varying environmental conditions) are not completely understood, and modifying a fertility plant based on tissue test results is difficult and is not recommended by most turfgrass scientists at this time.

Question: Are all tissue testing techniques the same?

Answer: No, they are not the same. Basically, there are two approaches that can be used: Wet Chemistry techniques and Near-Infrared Spectral analysis (NIRS).

Tissue Testing Methods
(Jones & Kalra, 1992)

Wet Chemistry
Atomic Absorption Spectrometer
ICP Plasma Spectrometer
DC Plasma Spectrometer

Other
Near-Infrared Spectral

Wet chemistry techniques utilize sophisticated laboratory equipment and dilution materials to determine nutrient concentrations. The Atomic Absorption spectrometer (a wet chemistry technique) can provide very accurate data, but the turnaround time for receiving results after submitting a sample may be as long as two weeks.

Recently, an effort has been made to adapt NIRS technology for analyzing the nutrient content of turfgrass tissue samples. Near-infrared spectral analysis can be done much more quickly and cost effectively than wet chemistry, and was first used to analyze forage grasses for protein content (Wilkinson & York, 1986). NIRS utilizes a spectrum of light in the near-infrared region. The instrument measures reflectance at specific bands or wavelengths of this light spectrum. A computer then uses this information to statistically predict the content of specific nutrient elements.

Unfortunately, many turf managers confuse the two methods. Wet chemistry analysis is a primary method of determining nutrient concentrations, while NIRS is a secondary method. In other words, a single wet chemistry labe (providing repeatable results) must be used to generate the database which then is used by NIRS technology. These data are stored in the computer and serve as a base from which tissue nutrient concentrations can be estimated. This process is ongoing.

The bottom line is that *wet chemistry* and *NIRS* techniques are different, and the terms should not be used interchangeably.

Question: Which method provides the most accurate results?

Answer: Wet chemistry techniques provide an accurate analysis of the nutrient concentrations within turfgrass leaf tissue (Jones & Kalra, 1992). On the other hand, available information and research literature do not support the accuracy of the newer NIRS procedure at this time. With the exception of nitrogen, correlation studies between NIRS and wet chemistry have produced weak to moderate relationships for many nutrient concentrations. NIRS provides results very rapidly, but unfortunately, interpreting this data is difficult and the accuracy of this technique currently is questionable.

Question: Can tissue analysis provide information about fertilizer needs that cannot be obtained from soil analysis?

Answer: Yes, but the information gained is difficult to

(Continued on Page 31)