POCONO TURFGRASS ASSOCIATION

CHIPS & PUTTS

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S.N.O.W. MEETING

Pictured above: Front row L-R: Nicole Heil, Lisette and Nina Kozar, Sarah Downer, Melissa Vojick, Amanda Downer, John and Chris Vojick, Darrin Larkin, John Downer. Middle: Bob Heil, Susan Downer, Willie and Eric McCausland, Jason Barndt, Matt Brown, Derrick Hudson, Eric Reed, Mark Romano, Shaun Henry, John Hollick, Lou Kluck. Back: Bennett Wartman, Dennis Wagner, Scott Andre, Gregg Kozar, Eric Duffy, Steve Chirip (with soda), Joe Henry, Duane Schell.

The Pocono Turfgrass Association's first winter S.N.O.W. meeting was a success, thanks to all in attendance. The "Superintendents Need Other Weather" meeting could be called the First Annual. The response was great and everyone requested a repeat next year.

There is a risk in all sports and Steve "has my forehead clotted yet?" Chirip found that out firsthand. Even the best skiers catch an edge once in a while, right Steve? Steve is all right and the rest of the forty skiers had their own stories to share in the halfway house at Elk Mountain. Bob "Fall-Line" Heil, a guest at our meeting, tested the gravitational theory quite often, most of the time headfirst. Many of the youngsters and friends joined in a train of skiers from the top of the mountain. John "Mother Goose" Downer led the mob, while Mrs. Downer followed, picking up the pieces. I am sure there are many great stories yet to be told.

Staff photographers Dennis Wagner and Alex Vojick did a great job capturing images for posterity. A special thanks should be given to all vendors who supported this endeavor: Scott Andre of Andre and Son, Matt Brown of Philadelphia Turf Company, Steve Chirip of Egypt Farms, and Tom Weinert of Plant Food. Please support all our suppliers as they enjoy lending their support to us.

I would like to thank the Social Committee members, Darrin Larkin of Panorama Golf Course and John Vojick of Andre and Son with their help and knowledge of Elk Mountain's staff.

John Downer

Baseball's Rocker will play crazed killer in short movie.

ATLANTA — Pitcher John Rocker will be flinging bodies instead of baseballs when he makes his big-screen debut as a homicidal maniac.

Rocker, notorious for offending gays and minorities, is playing the killer in a 90-minute movie called "The Greenskeeper," the *Atlanta Journal-Constitution* reported Saturday.

The film follows a 25-year old assistant greenskeeper who gathers friends for a country club birthday party. A killer dressed as a golf course greenskeeper crashes the party and dispatches naughty teens.

"Rocker has a crazy persona and the character needed a wild streak." said Kevin Greene, one of the film's producers.

Filmmakers are planning a May premier in Atlanta and are looking for national distribution.

President's Message.....

I was fortunate enough to attend the Annual Golf Course Superintendent's Conference and Trade Show. Every year I come away from that show more and more impressed with how the GCSAA staff handles it. Even though the show was smaller, for obvious reasons, it still amazes me the amount of companies that continue to support our associations, both national and local.

I had a chance to meet and discuss with Lee Kozsey and some other Syngenta people on ways that they could help our association to run a roundtable –type discussion with the other chapter leaders from Pennsylvania. It leads me to believe that some of the companies aren't just out for the money, but are willing to give something back. It was certainly quite refreshing.

I've recently appointed Ron Garrison to the position of Vice President of the Pocono Turfgrass Association for the remainder of the 2002 year (October). I felt with Ron's experience and dedication he was the right choice. Within the next issue or two of *Chips & Putts* we will publish a simple financial statement with scholarship amounts and other related information. As always, my line is always open (201-262-3365).

Gene Huelster

From the Editor's Desk.....

Kudos to Darrin Larkin, John Downer, John Vojick, and all others involved with putting the Ski Day together. A great time was had by all, and we look forward to this becoming an annual event. It was nice to see some members who are unable to frequent the summer meetings.

It appears winter's worst days are behind us now, and the start of a new golf season is not far away. It seems a little bittersweet knowing that some of us are virtually assured of starting our summers under drought restrictions.

Tony Grieco is still in need of a few meeting sites for the upcoming season. If anyone is interested in hosting a meeting, please contact him as soon as possible.

Eric Reed

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Back To Basics

As we embark on a new season, now is the time to remind ourselves about the fundamentals of soil nutrition. Soil analysis is one of the most important tools in our management arsenals and the success of our turf depends upon its utilization. For the sake of limiting the size of this article, we will just touch upon the basics of each soil test category. The biggest thing to remember is that soil is basically at its natural levels for reasons other than our personal manipulation, and although we can attempt to adjust these levels, the soil will ultimately revert back to its natural levels if we do not proactively continue our management programs; I.e., there is no such thing as tweaking the soil.

Soil pH

Soil pH is a measurement of the hydrogen ion concentration. The availability of most nutrients is best at a pH of 6.2-6.8. When the pH is higher, micronutrients such as iron (Fe), Manganese (Mn), Boron (B), Copper (Cu), and Zinc (Zn) become less available. Phosphorus availability decreases at pH levels lower than 6.0 because Aluminum and Iron tie it up. At levels higher than 7.5, Calcium ties up Phosphorus. The table below lists the pH tolerance ranges for different turfgrasses.

Grass Species	Minimum pH	Maximum pH
Fescue	5.0	8.5
Bentgrass	5.0	7.5
Bluegrass	5.0	8.4
Bermudagrass	5.0	8.0
Perennial Ryegrass	5.2	7.5
St. Augustine Grass	6.5	7.5
Salt Grass	6.4	10.5

Buffer pH (Lime index)

This index was developed to measure the total hydrogen (acid) in the soil, which needs to be neutralized by limestone applications. The lower the buffer pH, the more the soil will resist a change in pH. Therefore, more lime will be required to raise the pH to the desired level. Below is a generalized table of limestone applications for buffer pH values (assuming 100% CaCO3 source).

Buffer pH	lb. Lime/1000 sq. ft.
7.3	0
7.2	20
7.1	20
7.0	25
6.9	30
6.8	35
6.7	60
6.6	75
6.5	95

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CEC

CEC establishes the rate at which nutrients (cations) will be stored and released from your soil. Fertilizer recommendations are not based on CEC alone. However, CEC is used along with other soil test information to tell you how much Calcium (Ca), Magnesium (Mg), and Potassium (K) your turf needs. This concept is based on the concept of Percent Base Saturation. Since the clay and organic sites in the soil have a negative charge, the positively charged cations bond with these sites. Therefore, CEC can be closely related to soil texture.

CEC value	Estimated texture
1-8	Sand
9-12	Loamy Sand
13-20	Sandy or silty loam
21-28	Loam
29-40	Clay or Clay loam

Percent Base Saturation

Percent Base Saturation is the percentage of soil negative charges (CEC) occupied by those cations which do not contribute to the soil acidity. These cations are called exchangeable bases and are comprised of Ca, Mg, K, and Sodium (Na). The remainder of the negatively charged sites (CEC) are occupied by Hydrogen (H) and Aluminum (Al), which contribute to the soil acidity. Percent Base saturation is determined by dividing each individual cation by the total CEC. Optimum percentages are as follows:

	CEC Range				
Cation	**3-7**	**8-15**	**16-25**	**26-36**	**>36**
Hydrogen	<30	<30	<20	<20	<20
Sodium	<10	<8	<5	<5	<5
Magnesium	10-20	10-20	10-20	10-20	10-20
Calcium	50-75	50-75	60-75	60-75	60-75
Potassium	3.3-7.7	1.5-4.3	1.0-2.2	.7-1.3	.5-1.3

Organic Matter

Organic matter is the result of the decay process of organic residues. The resultant humus compound has active cation-holding sites. These sites serve as a storehouse for plant nutrients and also improve soil struc ture in heavy soils. In most productive soils, the topsoil contains betwee 1-10% organic matter. Sand greens may contain zero or less than .5% OM. As a result sand greens have high leach rate, low water holding ability, and low nutrient content.

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Phosphorus (P)

Phosphorus is found in all plant tissue, but is most pronounced in the seeds, flowers and youngest shoots. It is critical to the establishment of cool season grasses from seed. Phosphorus is the backbone of many enzyme and amino acid systems, including photosynthesis. Once thought to promote the invasiveness of poa annua, the overuse of nitrogen has been shown to have a greater effect on poa invasion rather than phosphorus. For most soils, 150-200 lbs. of available P per acre should easily satisfy turf needs.

Potassium

Potassium is second only to nitrogen in the amounts required by turfgrass plants. It has become increasingly recognized for its ability to improve plants' resistance to biotic and environmental stresses such as disease, drought, and cold temperatures. Adequate potassium nutrition also has been associated with better traffic tolerance of turfgrasses. Potassium should comprise 3-5% of the base saturation. Too much potassium can cause an imbalance in the base saturation by replacing calcium or magnesium. Of the three common sources available, caution should be exercised with the use of potassium chloride (muriate of potash) because of its high salt index. The other two sources are potassium nitrate and potassium sulfate, with potassium sulfate being the preferred source because of its ability to compete with excessive calcium or magnesium for colloidal sites.

Calcium

Calcium is present in adequate amounts in most soils. It is essential for proper cell division and elongation, proper cell wall development, nitrate uptake and metabolism, enzyme activity, and starch metabolism. According to Dr. Stanley Barber, Purdue University, "There is no research justification for the added expense of obtaining a definite Ca:Mg ratio in the soil. Research indicates that plant growth or quality is not appreciably affected over a wide range of Ca:Mg ratios in the soil." Wisconsin research found that yields of several agricultural crops were not significantly affected by Ca:Mg ratios ranging from 2.28:1 to 8.44:1...in all cases, when neither nutrient was deficient, the crops internal Ca:Mg ratio was maintained within a relatively narrow range consistent with the needs of the plant. Actual calcium deficiencies in the turfgrass are rather rare, and problems associated with low soil Ca may usually be attributed to soil reaction problems rather than a true calcium deficiency. Liming to the proper pH should be the first consideration in supplying Calcium to the plant. If additional Ca is needed and the soil pH is already correct, neutral amendments such as gypsum or fertilizer products are available.

Magnesium

Magnesium is essential to good plant growth because it controls the development and biochemistry of the chlorophyll molecule. It aids in phosphate metabolism and helps to activate several enzyme systems. Excessive Magnesium can create a "gluing" effect on the soil and cause phosphate, potash, and nitrite deficiencies. High Magnesium and low calcium levels in soil allow organic matter to decay into alcohol, which can suppress bacterial populations. Proper liming with dolomitic limestone is almost always the most practical solution to low Mg, even if the dolomite is more expensive. Response can also be obtained from foliar applications of both Epsom salts and Magnesium chelates.

Sulfur

Sulfur is used to make proteins, amino acids, and enzymes. It is a catalyst in the production of chlorophyll. Most soil sources of S in the organic matter in the topsoil or plow layer. Elemental sulfur is not available to plants; it must be converted to the sulfate form to become available to the plant. This conversion is performed by soil microbes and requires soil conditions that are warm, moist, and well drained to proceed rapidly. Heavy industry and acid rain have historically supplied all but the most rural areas ample amounts of sulfur. With today's higher pollution standards, less sulfur is available "naturally," so it must be applied to the soil in the form of magnesium-, calcium-, or potassium-sulfate. While deficiencies will be noticeable, theories vary on what ratios are actually "ideal." Excessive applications most often result in a depression of soil pH and an increase of the problems that occur with

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excessively acid soil.

Iron

Iron works as a carrier of oxygen required in the production of chlorophyll. Most soils provide an abundant supply of Fe to the plants. Turf is somewhat unique in that it is common to get color improvement from Fe applications. Deficiencies will result in chlorotic or even white young leaves. Iron toxicity is primarily pH related and occurs where the soil pH has dropped sufficiently to create an excess of available iron. Chelates and citrate-acidified sulfates are effective for foliar applications. Avoid the use of sulfates that have a rusty-red coloration since this indicates an oxidation may have occurred, making Fe unavailable to the plant.

Manganese

Manganese is involved with the oxidation and reduction reactions in the plant that aid in carbohydrate metabolism. Mn deficiencies have rarely been observed on turfgrass. In studies at Cornell University, researchers found that biweekly applications of manganese at a rate of .5 oz per 1000 square feet produced a positive response in turf growth and quality. The research also suggested that low levels of toxicity might occur on low pH greens at a higher rate (1.5 oz/M biweekly). Iron and Manganese are antagonistic, and one will inhibit the uptake of the other. If manganese levels creep above the iron levels, the mobility of iron falls off and photosynthesis suffers.

Copper

Copper helps to form many different proteins, amino acids, enzymes, and organic compounds and is critical in the process of root metabolism. It is important to formation of lignin in plant cell walls, which contributes to the structural strength of the cells and the plant. High soils organic matter levels reduce copper availability. Copper should not be applied to soils without a demonstrated need trough soil and plant analysis. Toxic effects from over-application can last many years.

Boron

Boron is required for translocation of sugar and helps regulate salt, water, and nitrogen assimilation in the plant. Excessive levels of Boron have been reported to produce a tipburn. The range between a correct boron application rate and a toxic one is not large.

Zinc

Zinc aids the plant in water absorption and is essential for proper metabolism of many microorganisms including the nitrogen-fixing azotobacter. Research has not found any effect from Zn applications in regard to growth rate, color, and density. However, they did report that root growth was stimulated by low rates of Zn, whereas rhizome growth was strongly inhibited by a high application rate of 25 LB per acre. N.E. Christians did not observe any detrimental effects to bentgrass from zinc applications as high as 47-63 lbs per acre.

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Sodium

Sodium provides information relating to reclaiming saline and or alkaline soils. When it's base saturation exceeds 5%, water infiltration rates can be reduced. This may not be true in the case of sand-based greens, where sand size (not soil structure) promotes infiltration. This salt load can only be reduced by leaching it below the rooting zone. Gypsum, Epsom salts, or elemental sulfur can be used to displace sodium so that adequate amount of irrigation water can leach it out.

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NEWS AND VIEWS FROM THE POCONO TURFGRASS ASSOCIATION

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*Also, thanks to Simplot Partners, who were inadvertently left off this list.

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