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## No Objection to Injection

*Continued from page 80*

tendents, that means using fertigation on fairways but continuing to put down nutrients on greens using a sprayer or spreader.

Superintendents are not constrained by the equipment with a 0-0-40 application going on as easily as 18-24-6, and all points in between.

And there is still another benefit.

"We can also control the pH of water," Bergwin says.

Even in states that have not traditionally used fertigation, it is getting great reviews.

In 2001 Mike Stachowicz grew in The Ranch in Southwick, Mass. It was his first time using the technology, but when he looked into fertigation, it was an easy choice.

"I did the math on it, and I could pay for a fertigation system out of my fertilizer budget," says Stachowicz, now superintendent at Dedham (Mass.)

**"You manage your highs and lows with fertigation. Then you get your evenness."**

MIKE STACHOWICZ  
SUPERINTENDENT

Country and Polo Club. He even went so far as to research the technology and built his own system for The Ranch.

By spoonfeeding with light and frequent rates, Stachowicz says his turf grew in better than he expected. He also kept tabs on two other courses in the region that were growing in at the same time and found his course came in better and faster than the other two. He

continued using fertigation to maintain his 40 acres of fairways. Because of the density of the new varieties of bent-grasses, which in some cases require greens-grade fertilizers to penetrate the dense canopy, Stachowicz says the savings are substantial, as much as \$2,000 an application.


"It's a daily-fee golf course and you do what you can to save money," he adds.

Even though he is now at a private club, Stachowicz is once again looking to build his own system, one that is a little more sophisticated than his first. He also has become more adept at using fertigation.

Stachowicz says his plan is to continue to use standard application procedures on greens as well as on fairways a couple of times during the season.

"You manage the highs and lows with fertigation," he says. "Then you get your evenness." ■

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## Crown hydration may be a

# Royal Pain

## but superintendents have learned how to deal with it

**'T**is the season for snow, cold and potential turf damage, especially in the North. But these days, what with the wacky weather we're experiencing (I know, people have been saying this for decades), it seems that most states in the union are not immune from the teeth-chattering wrath of Old Man Winter.

That said, we turn our attention to crown hydration, one of the most common types of low-temperature injury in turf. Recently, we asked superintendents: What can you do to contain crown hydration or stop it from occurring? Here's what they had to say:

"What we do is very simple. We spray with one of the antitranspirant materials because we can have extended periods without snow here in Chicago. We topdress the greens and tees generously. We also cover a number of our problem greens."

— **Tommy Witt, certified superintendent and golf course manager of Northmoor Country Club in Highland Park, Ill.**

"I think most damage begins in the spring when low-temperature hardiness decreases and the hydration of the crown starts to increase. Here are some of the ways to prevent it from happening:

- Minimize high nitrogen applications late in the year.
- Minimize heavy irrigation in the late fall.
- Aerate compacted soils to increase drainage.
- Remove thatch, which tends to raise the

crown of the plant from the soil.

■ Increasing the height of cut and reducing the frequency of mowing in the late fall will help the plant slow its growth and lower the crown hydration level."

— **Bryan Tipton, former certified superintendent of Sutton Bay Golf Club in Agar, S.D., who begins work as certified superintendent of Eagle Ridge Golf Course in Williston, N.D., in February.**

"Come spring, when the snow is melting, we shovel pathways on the greens so there isn't any free-standing water to freeze and damage crowns. Also, we try to let the greens grow a bit in the late fall so they can store up carbohydrates. We do our best, but we're still at the mercy of nature at times. The last two winters have been tough."

— **James Bade, superintendent of Somerset Country Club in St. Paul, Minn.**

"Every fall before snow cover, we aerate our greens and tees to create more drainage for any excess water accumulation. We then apply a heavy application of topdressing to act as insulation for the crown portion of the plant. We only mat in the topdressing once so that we do not completely fill in the holes and it then acts as a natural blanket. The only other protection we do to greens subject to extreme wind conditions is cover them with permeable tarps. This step is strictly for prevention of wind dessication."

— **Greig Barker, assistant superintendent of North Halton Golf & Country Club in Georgetown, Ontario.**

*Compiled by Larry Aylward, Editor in Chief*



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of who you know.



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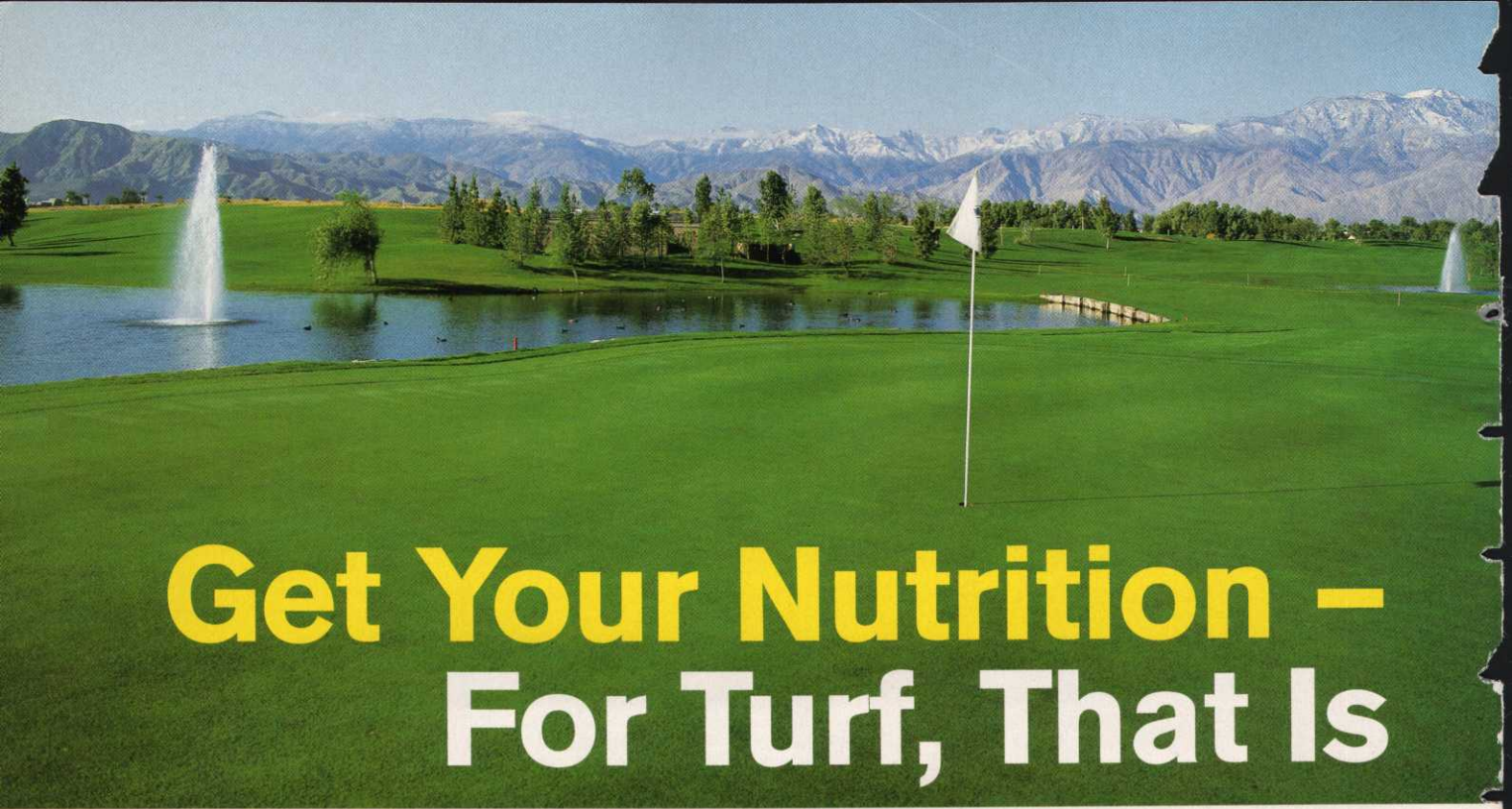


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# Get Your Nutrition – For Turf, That Is

Check out this round-up of fertilizer and nutrient products that will surely cater to your turf needs

## Steady delivery

NITAMIN Steady-Delivery fertilizers from **Georgia-Pacific Resins** not only improve the health and density of the turf, they also help grass grow at a consistent rate. By ensuring that a steady supply of nitrogen is continually available within the soil, NITAMIN fertilizers keep turf healthy and green for months without the need for re-application.

Fertilizer products containing NITAMIN as the nitrogen source of choice are available in liquid and soon-to-be commercialized granular forms. The NITAMIN product line also includes a patent-pending way of delivering nitrogen to turf in the form of NITAMIN Coated Sand, which combines topdressing with nitrogen fertilization.

For more information, visit [www.nitamin.com](http://www.nitamin.com).

## Slow-release liquid fertilizer

**Regal Chemical Co.** offers a variety of fertilizers – from brand-name products to custom blends, from quick start to slow release and from liquid to dry. One of the products the company offers is LiquiGreen, a slow-release liquid, specifically formulated methane urea fertilizer. LiquiGreen is engineered to maximize plant growth in harmony with soil chemistry. It contains Nitamin as a nitrogen source.

For more information, visit [www.regalchem.com](http://www.regalchem.com)

## Turf program

**Profile Products** offers Profile Golf, a new program that it says will help promote turf health, speed establishment and control sediment erosion.

The program consists of two components: incorporating amendments into the soil to promote fast root establishment and applying materials on the surface to promote rapid germination. Company agronomists and certified professionals in erosion

and sediment control will work with superintendents to create customized plans for their golf courses. For information, visit [www.profileproducts.com](http://www.profileproducts.com).

## Foliar products

**Milliken Turf Products** offers True Foliar NPK Phosphite 10-20-16, an improved version of True Foliar P 6-12-6. In addition to a general increase in the content of all macronutrients, the product now contains a phosphite source derived from phosphorous acid. True Foliar NPK Phosphite contains a minimum of 10 percent of the company's proprietary seaplant extract.

The company also offers SeaBlend, a blend of high-quality organic and synthetic ingredients, to produce a rich turf color.

For more information, contact [www.milliken.com](http://www.milliken.com).

## Dry-soluble combination

**Becker Underwood** offers VigaROOT, used in spray application programs to reduce stress and stimulate root growth through enhanced water and nutrient uptake. VigaROOT is a dry-soluble combination of iron-chelated manganese, chelated zinc, natural humic substance, seaweed extract, yucca, and a proprietary blend of natural sugars, vitamins, amino acids, and beneficial bacteria.

For more information, visit [www.beckerunderwood.com](http://www.beckerunderwood.com).

## Composted chicken manure

**EarthWorks Natural Organic Products** has been formulating and manufacturing dry and liquid organic soil amendments since 1988. Its products include Replenish 5-4-5 – Formulated Organic Fertilizer. The foundation of the product is composted chicken manure with 40 percent of the product made of rock minerals and carbon activators. Turf is a cover crop,

*Continued on page 88*

MIKE KLEMM



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## Get Your Nutrition – For Turf, That Is

*Continued from page 86*

one that is constantly de-mineralizing the soil, and 5-4-5 is a good way to "Replenish" this mineral content and provide the plant with a sustainable supply of needed macro and minor nutrients, the company says.

Replenish 5-4-5 provides as much as 60 percent more organic matter than a meal-based product, which is the basis for using organics.

For more information, visit [www.soilfirst.com](http://www.soilfirst.com).

### Meal-based fertilizer

**Nature Safe** fertilizers are constructed meal-based fertilizers derived from feed-grade proteins such as meat, bone, blood, poultry, fish and feather meals as well as bakery by-products and humates, not waste by-products. Nature Safe promotes strong turf color and builds stress tolerance. Some of its products include:

- 8-3-5 Stress Guard Fertilizer is for new or established turf or can be used during renovation and overseeding. It amends stressed areas and is a good product for greens, the company says.

- 10-2-8 All Season Fertilizer enhances root and shoot stability with controlled plant growth. It improves overall disease management by increasing the efficiency of fungicides. It's a good fertilizer for tees, fairways and ornamental plantings, the company says.

For more information, visit [www.naturesafe.com](http://www.naturesafe.com).

### L- amino acid-based fertilizers

**Nutramax Agriculture** offers products that feature only biologically active L-form amino acids obtained through enzymatic hydrolysis of natural protein. Included is MACRO-SORB foliar, a biofertilizer based on amino acids. It allows for greater absorption and transport of nutrients through the leaves into the plant. The action of L- amino acids and substances with phytohormonal effect in MACRO-SORB foliar helps to regulate the opening of the stomata, increase water potential, regulate osmotic pressure, slow down photorespiration and increase net photosynthesis.

MACRO-SORB foliar is a true systemic with no phytotoxic effects and is tank mix compatible with soluble fertilizers, fungicides, insecticides, plant growth regulators and herbicides.

For more information, visit [www.nutramaxlabs.com](http://www.nutramaxlabs.com).

### Balanced, long-term nutrients

Proforma is **ProSource One's** own premium-quality private brand of geographically specific fertilizers. Proforma fertilizers provide balanced, long-term nutrients for both the turf and the soil microflora. They supply the soil and turf with the plant materials needed to

maintain a complete and healthy system.

For more information, visit [www.prosourceone.com](http://www.prosourceone.com).

### Potassium sulfate

**LebanonTurf** offers a variety of fertilizers, including Expo, a cost-effective, controlled-release source of potassium sulfate, which extends the agronomic benefits of potash. Leaching studies have demonstrated that the potash in Expo requires significantly more water to be completely leached than does the potassium in "regular" sulfate of potash.

LebanonTurf also offers a line of organic-based fertilizers. The company developed LebanonTurf 10-2-10 and 14-2-10 with the help of Nature Safe. These products showcase the best technologies of each company: Meth-Ex 40 features the high-activity methylene urea complex from LebanonTurf and Nature Safe's high-efficiency constructed organics.

For more information, visit [www.lebanonturf.com](http://www.lebanonturf.com).

### Organic fertilizer

**Milorganite's** organic fertilizer is versatile and can be used anywhere a superintendent or groundskeeper deems necessary. Milorganite is ideal for a variety of applications: greens; fairways and roughs; tee boxes; trees; planting beds; and flowering shrubs.

For more information, visit [www.milorganite.com](http://www.milorganite.com).

### Foliar auxiliary nutrients

**Floratine** offers a variety of foliar auxiliary nutrients designed to address the photosynthetic and chlorophyll requirements of turf-grasses. The products include Astron, Per "4" Max, ProteSyn, Knife-Fortified iron supplement, Renaissance and others.

The company also offers value-added foliar nutrients to provide linear sustenance and support even, consistent growth.

For more information, visit [www.floratine.com](http://www.floratine.com).

### Microbial-based products

**Novozymes Biologicals**, ROOTS Plant Care Group offers TurfVigor and Turf Food microbial fertilizers, designed to provide turf with a total nutrition package. Both offer a blend of extended-release nutrients, patented strains of beneficial microbes and the ROOTS biostimulant complex. Choose TurfVigor for liquid applications and Turf Food for granular application.

For more information, visit [www.rootsinc.com](http://www.rootsinc.com) and [www.novozymes.com/roots](http://www.novozymes.com/roots).

### Combination products

**Bio Basics LLC** markets natural-based granular fertilizers using Pasteurized Poultry Manure from Perdue Farms as the base for both

the stand-alone product and the ALLY product line. PPM 4-2-3 alone provides excellent carbon and calcium sources for the plant and soil while performing as a slow-release fertilizer. The alliance of PPM and regionally specific blends of synthetic fertilizer allows the customer to apply sufficient N-P-K requirements along with organic carbon and mineral sources at the same time.

For more information, visit [www.biobasic.biz](http://www.biobasic.biz).

### Polymer technology

**Pursell Technologies Inc.** offers POLYON controlled-release fertilizers, which feature the patented polymer technology that provides gradual feeding for months. POLYON-coated nutrients feature an extremely durable ultra-thin polyurethane coating that provides nutrition at precisely the right time when plants need major, minor and secondary elements, according to the company.

Through a patented reactive layers coating process, the ultra-thin POLYON coating is chemically bonded to nutrient granules, creating an extremely durable and reliable granule for 100-percent controlled release.

For more information, visit [www.polyon.com](http://www.polyon.com).

### Micronutrient delivery system

**Clawel Specialty Products** offers Specialized Nutritional Formulas that are a combination of nutrients and other compounds that contain hormone precursors, natural plant aminoacids, plant vitamins and anti-stress (antioxidants) substances. A proper combination of nutrients and biostimulants will enhance photosynthesis, negate toxic levels of stress producing substances (oxidants) and enhance root production.

Clawel also offers Premium Fertilizers, a combination of different nutrient formulations designed for specific needs.

For more information, visit [www.clawel.com](http://www.clawel.com).

### Controlled-release nitrogen

**Nu-Gro Technologies** offers Organiform Controlled Release Nitrogen. Organiform 30-0-0 is a reacted nitrogen product, similar to Nu-Gro's other proprietary products. Organiform offers an intermediate release, up to 24 weeks. Based on carbon-linked polymer chains, Organiform has 55-percent water insoluble nitrogen.

The company also offers Nitroform and Nutralene fertilizers. The controlled-release mechanisms in the fertilizers give plants the nitrogen they require when they require it, according to the company.

For further information, visit [www.nugrotech.com](http://www.nugrotech.com).

*Continued on page 90*



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## Get Your Nutrition – For Turf, That Is

*Continued from page 88*

### Fertilizers

**PRO-SOL** offers its turf fertilizers Chameleon and Transition intended for direct application. Chameleon contains iron with a combination of eight essential macro-, secondary and micronutrients. Transition contains potash with a combination of four essential secondary and micronutrients.

For more information, visit [www.fritinc.com](http://www.fritinc.com).

### Remineralizer and bioinoculant

**Soil Technologies Corp.** introduces TurfTech Bio-Min, a new re-mineralizer and bioinoculant for golf course turf. The patented technology combines three agronomic tools in one easy-to-use formula. Research on TurfTech Bio-Min has demonstrated that the product reduces fertilizer requirements, suppresses common turfgrass pathogens and improves water infiltration.

One of the unique contributions of TurfTech Bio-Min is the addition of a micronized volcanic rock powder that delivers more than 60 trace elements not found in conventional N-P-K fertilizer. When applied to soil and plants, TurfTech Bio-Min strengthens the cell wall and activates enzyme activity.

For more information, visit [www.soiltechcorp.com](http://www.soiltechcorp.com).

### Fertilizer/wetting agent

**Precision Laboratories** offers three analyses of Cascade Plus Fertilizer, a wetting agent and fertilizer-combination product. It's available in an all-synthetic 15-0-10 analysis, a 5-1-0 all-organic analysis and a 10-1-4 organic and synthetic combination. The three analyses have a 150 sgn particle size, making them appropriate for use on tees, fairways and roughs.

For more information, visit [www.precisionlab.com](http://www.precisionlab.com).

### Microbial inoculant

**Growth Products** offers Companion, a microbial inoculant that contains *Bacillus subtilis* GB03 microbes, which quickly colonize the root zone. It is good for use with sterile soils, as well as with high sand content tees and greens. A vigorous beneficial microbe population means healthier soil and plants.

The company also offers Essential Plus, a root stimulator that contains plant extracts such as humic acid, L-amino acids and a natural wetting agent not found in standard NPK fertilizers.

For more information, visit [www.growthproducts.com](http://www.growthproducts.com).

### Longer term feeding

**LESCO** offers NOVEX, which offers chemical and particle production techniques to provide quicker, initial green-up, more nutrient release and longer-term feeding for healthier turf. Fast-acting nitrogen is released initially for quick greening but is balanced with greater amounts of controlled-release nitrogen compounds, resulting in green-up that continues long term. NOVEX uses a unique particle-compounding technique. Rather than combining multiple nutrient particles into a single fertilizer bag, LESCO manufacturers NOVEX so that each particle contains every nutrient.

For more information, visit [www.lesco.com](http://www.lesco.com).

### Methylene urea technology

**The Andersons Golf Products** offers fertilizer with Contec methylene urea technology for controlled even-nutrient release. The fertilizer also provides a high rate of potash from potassium sulfate. It dissolves quickly into the turf canopy when irrigated.

The Andersons also offers Fertilizer Plus Millennium Ultra, a weed and feed granular formulation. Millennium Ultra contains three separate herbicides, including clopyralid to combat and control clover.

For more information, visit [www.Andersons-GolfProducts.com](http://www.Andersons-GolfProducts.com).

### Quality and consistency

**UHS's** Signature Brand Fertilizer Blue Line is comprised of products that feature quality and consistency, the company says. UHS's premium offering is found in its Signature Brand Fertilizer Green Line bag. These products feature Balanced Chain Methylene Urea (BCMU).

For more information, visit [www.uhsonline.com](http://www.uhsonline.com).

### Foliar absorption

**Grigg Brothers** products have been specifically designed for foliar application and foliar absorption. All product contains "facilitators" that aid penetration into plant cells, effectively translocate to sites of action, and provide all or most of the nutrients needed by plants to chelate minerals. In addition to special facilitators, Grigg Brothers products contain an organic base, consisting of natural organic compounds which function metabolically and are found naturally in the plant.

For more information, visit [www.griggsbros.com](http://www.griggsbros.com).

### Liquid irons

**PBI/Gordon** offers biostimulants and micronutrients. Its liquid irons include RROMEC and FeRROMEC AC. The former provides fast, dependable green-up, usually within 24 hours of application, and corrects chlorosis due to iron deficiency. The latter is an amine-compatible formulation for FeRROMEC green-up that can be tank-mixed with other turf care products.

The company also offers turf biostimulants, including FOCUS, which contains high concentrations of turf-beneficial materials extracted from humic acid and Kelp in precise ratios for optimum turf response for resistance and recovery from stress.

For more information, visit [www.pbigordon.com](http://www.pbigordon.com).

### Humus-based product

**Gro-Power** Premium Green 5-3-1 is a multi-purpose homogeneous fertilizer/soil conditioner. Using the company's Matrix technology, the product was developed for greens, tees and any other areas where fine-bladed bent and hybrid bermuda turf grasses are utilized. The particle size will ensure even distribution, rapid penetration into the root zone and minimum mower pick-up.

The basic material in Gro-Power Premium Green 5-3-1, as in all the Gro-Power products, is humus. Humus promotes bacterial propagation, which tends to improve soil structure, helps to increase the moisture-holding capacity and helps in breaking up compacted soils.

For more information, visit [www.gropower.com](http://www.gropower.com).

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