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- **Turf Tabs** will fit in all major commercial hose end applicators.

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funded project, "Evaluation of Cytokinin Plant Extract Bio-stimulants: Iron and Nitrogen Products for their Effectiveness on Summer Creeping Bentgrass Summer Quality." The research was conducted by Drs. Derek Settle and Peter H. Dernoeden and can be accessed through the USGA's Turfgrass and Environmental Research On-Line at <http://usgatero.msu.edu/vo8/no1.pdf>.

This field study examined the impact of six products that contained cytokinins, and other plant extracts nitrogen or iron, or various combinations thereof on their impact on creeping bentgrass putting green color and summer quality. These products were compared to urea (N) and evaluated in

Lemont, IL, and College Park, MD, in 2007 and 2008.

In the report summary, a key point that caught my attention was: When data were averaged over the season in both IL and MD, urea alone and treatments containing urea generally provided best summer quality. There were, however, no significant differences among urea alone, Iron Roots plus urea, Roots Concentrate plus urea, or Panacea Plus and urea at either site." Product application costs were also included in the report and ranged from \$7.50 per acre for urea to \$29.00 to \$170.00 per acre for the other products used in the study. This information reiterates the point that significant cost savings can be achieved without

compromising quality by using basic materials.

Even in the Information Age, keeping up with the most current research can be challenging. Also, every course has unique characteristics, and thus on-site evaluation of products should be performed.

This does not have to be a large and time-consuming process; but in order to fairly evaluate a product, an untreated control — or check — plot is needed. This can easily be accomplished by using a sheet of plywood to cover temporarily the same area of turf each time before application of a new product. Having a side-by-side comparison makes it easy to decide if real benefits are being provided.

Organic Fertilizers and Pesticides

By Joel Jackson

In an age, where the term 'Going Green' takes on many aspects, organic-based products are making their way into golf course fertilizer and pest-control maintenance programs.

Some of the more recent products like Ecumen are a direct result of the loss of Nematicur as the predominant nematicide used on golf courses.

As Nematicur was being phased out, several superintendents like Steve Wright at Boca West, Alan Puckett at Eaglerooke and Steve Ciardullo when he was at Mountain Lake tried the product NeoTec to suppress nematode activity and reported various levels of success. Recently Bill Kistler at Tampa Palms told me they had applied DiTerra this past June and reported significant reductions in sting nematode counts in follow-up samples.

On the nutrient side, who among us hasn't applied Milorganite sometime in our careers? And we have seen additional organic fertilizer blends emerge like Nature Safe and Bovamura among several others. These just happen to be some of the brands I have heard about or seen advertised. And these are just the granular products, there

are also numerous liquid blends used in foliar feeding programs.

The timing of this topic during the current recessionary trend is perhaps unfortunate since budgets have been scaled down at most clubs, so discretionary spending on all products and programs in general is under closer scrutiny. So getting the biggest bang for your buck is critical.

At the USGA Green Section program out in San Diego this past February, one of the presentations concerned ways to economize and yet still provide good playing conditions, and the take-home message was, stick to fulfilling basic agronomy needs for the health and performance of the turf."

One example was that if soil and tissue samples showed you needed to apply nitrogen, then apply urea and not a full blend with other macro and minor nutrients if the test doesn't call for it; and the same goes for potash, phosphorous, etc.

I know we can't generalize too much because each course is different with its soil profiles, water quality, micro-environments, etc. There are situations like the loss of Nematicur that call for trying other products and other than Curfew, some of the organic products might deserve a look as a useful tool for your particular course.

In a companion article in this section, John Foy, director of the Florida Region of the USGA Green Section talks about doing your due diligence in selecting and using organic based products. They may have a place in your programs. Just make sure they're the real McCoy and a good fit for your course and your budget.

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SUPER TIP

Twist and Shout No More!

By Darren J. Davis

Maintaining a good stand of grass on the putting green and collar is perhaps one of the primary responsibilities of today's golf course superintendent. Greens are always priority number one, and the reputation of the course and superintendent is often determined by their condition. Amazingly, when the greens are good, most other inconsistencies on the course are usually overlooked.

Technological advancements and research have provided today's golf course superintendent with improved equipment, better techniques and added knowledge, enabling them to better maintain closely cut, heavily trafficked turf. However, when encountering stress in the midst of the winter golf season, such as the extremely cold and cloudy winter of 2010, turfgrass management often involves using whatever means necessary to keep grass alive!

Veteran golf course superintendent Jim Whalen at Calusa Pines in Naples, has worked at some prestigious golf courses in his career. Among them, Augusta National Golf Club and Congressional Country Club are on his resume. Similar to Augusta and Congressional, Calusa Pines prides itself on providing a challenging golfing experience with lightening fast greens.

At Calusa Pines, due to a very low height of cut and frequency of mowing and rolling, the edges and collars



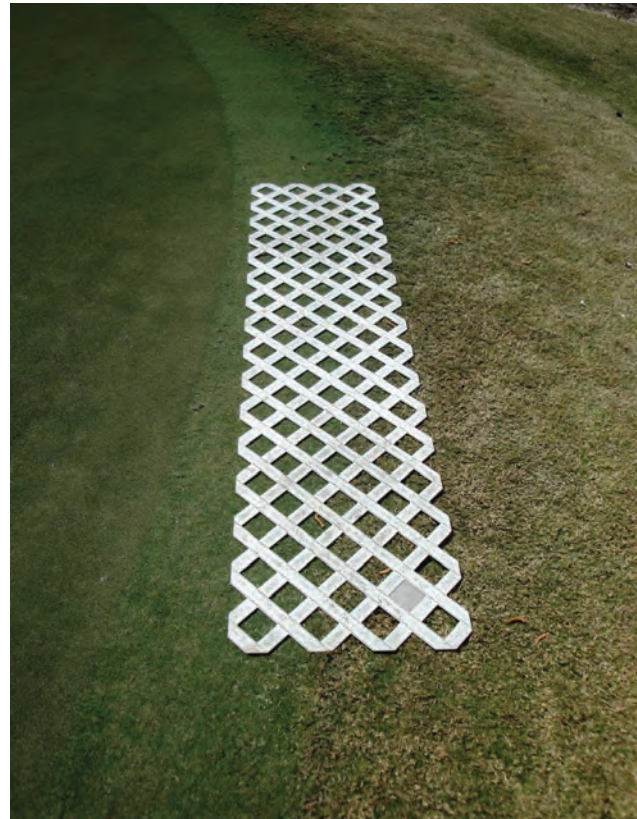
Plastic lattice sheets are lightweight and easy to transport. Photo by Darren Davis.

of some greens need a little extra attention. In part, due to the challenging Winter of 2010, Whalen instituted a practice that helps to alleviate stress on his putting green collars.

Whalen purchased a dozen sheets of 1/8 x 23-1/2x 95-inch white garden plastic lattice from Home Depot at a cost of \$11.97 each. The greens mowing crews transport the lightweight sheets of plastic lattice each morning in the backs of their utility vehicles. Before mowing, the sheets are laid flat on the collar in areas where the walking mowers

normally make their turns.

Turning on the lattice alleviates the twisting and subsequent tearing or thinning of the turfgrass in areas that are under the most stress. While at Congressional, Whalen witnessed a similar technique where plywood was used for the same purpose. He feels the lattice is equally effective, more durable and much easier for the crew to handle.



Lattice provides greens collar protection from mower turning damage. Photo by Darren Davis.



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For best results applications should begin in early March.

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The Florida Golf Impact Report was unveiled Jan. 28 at the 57th PGA Merchandise Show in Orlando. In attendance were, from left, Joe Steranka, PGA of America CEO; Rich PGA Merchandise Show in Orlando. In attendance were: (l-r) PGA of America CEO Joe Steranka; executive director of the North Florida Section of the PGA Rich Smith; Florida Chapter of the Club Managers Association of America President Al Kinkle; North Florida PGA

Section President John Reger; governor of the State of Florida, Charlie Crist; FGCSA Vice President Gary Myers, CGCS; Martha Mazzitelli, past president of The Florida Gulf Coast Chapter of the Hospitality & Financial Technology Professionals; Cindy Acree, executive director of the Florida Golf Course Owners Association; and executive director of the Florida State Golf Association, Jim Demick. Photo courtesy of the PGA of America.

Florida Golf Economic Impact Study Unveiled at PGA Merchandise Show

On Jan. 28 in Orlando, Allied Golf Associations met with Gov. Charlie Crist to present study results from the latest Florida Golf Economy Report. The event took place at the PGA Merchandise Show at the Orange County Convention Center.

Florida, recognized worldwide for hosting championship golf events among its more than 1,100 golf courses and 62 golf resorts, also carries the distinction of having the largest direct golf economy of any state. Florida hosted 20 professional championships in 2007, including 11 PGA Tour events, six Champions Tour events, two LPGA Tour events and one Nationwide Tour event.

In 2009, the Florida Golf Economy

Report was commissioned by GOLF 20/20 for the Florida Golf Impact Task Force, and prepared by SRI International. The report, which contained its most recent data from 2007, indicated that the Florida golf industry generated a total economic impact of

\$13.8 billion, supporting more than 167,000 jobs with \$4.7 billion of wage income. Golf-related events donated over \$312 million dollars to Florida charities.

In 2007, the size of Florida's direct golf economy was approximately \$7.5 billion – the largest in the United States. This is comparable to revenues generated by other key industries in the state, such as amusement and theme parks (\$4.0 billion), medical equipment and supplies manufacturing (\$4.4 billion), agricultural products (\$7.8 billion), and hotels and motels (\$11.2 billion). Golf brings visitors to the state, spurs residential construction, generates retail sales, and creates demand for a myriad of goods and services.

**The full version of
The Florida Golf
Economy report is
available at
www.golf2020.com.**

Weathered, Worn and Battered

By Todd Lowe

Cold conditions continue to plague Florida golf courses, as below-normal temperatures have persisted since early January. A golf course superintendent from Southwest Florida questioned a local meteorologist about weather conditions, and below are a few of the reported facts:

- There have been nine morning lows in the 30s. In an average year, we reach the 30s only a few mornings for the entire winter season.
- Three morning low records have been broken.
- The coolest high temperature was tied on Jan 10.
- The area has tied "the record" for consecutive lows below 50 F.

On Jan. 9, a high of 52 F was reached at midnight, but around 8 a.m. tem-

peratures fell into the 30s and remained there all day. The coolest high temperature was 40 F, so, if you overlook midnight, Jan. 9 could be the coldest day ever in Ft. Myers.

The turf actually began to come out of winter dormancy and turn green on lower mowed surfaces when a slight reprieve from the cold weather was experienced in late January. Believe it or not, this factor also had a negative impact on some golf courses that deal with plant-parasitic nematodes, as the nematodes became active as well.

Soil temperature dropped shortly thereafter with several cold fronts and frosts, and this caused additional turf loss, as already-thin areas received continued golfer traffic and no turf recovery. Putting green perimeters have been the most widely damaged areas due to the stresses of increased mower turning,

golfer entry and exit, and shade.

Cold fronts have generally been accompanied by rain. In fact, many superintendents have reported no irrigation applied in 2010 to date. This has had a beneficial impact on lake levels, as they are very high on most golf courses, but excessive leaf and soil moisture and moderate temperatures can increase turf diseases. Patch diseases have been observed at a few golf courses, and the University of Florida turf pathology lab has reported a high incidence of Pythium in golf course samples. Preventive fungicide programs should be continued until warmer and drier conditions occur.

Recovery simply cannot occur until active turf growth resumes with warmer soil temperatures. Multiple days above 80F and nights above 60F are necessary to make any marked improvements



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in turf quality. Sustained warm air temperatures are necessary to significantly raise soil temperatures. Active bermudagrass recovery can occur when soil temperatures rise above 65 F at a 4-inch depth.

EDITOR'S NOTE

Following are February cold-damage comments from John Foy, USGA Green Section director of the Florida Region.

For the northern third of Florida, freezing temperatures occurred for several nights in a row, and bermudagrass and seashore paspalum went fully dormant and off-color.

Most golfers in this part of the state are more understanding, as they witness this annually. But, with the large-acreage winter overseeding programs being discontinued at many courses, there have been concerns expressed

Only once in my 25-year career with the Green Section has true bermudagrass winter kill been encountered in Florida. That was in 1987 and was limited to a few putting greens in the Panhandle.

about the brown grass. Temperatures have not sufficiently warmed enough to allow the bermudagrass to break winter dormancy.

The resumption of sustained growth in North Florida cannot be expected for at least a couple of months, and the continuation of aggressive traffic management is essential to minimize damage and loss of turf coverage. Only once in my 25-year career with the

Green Section has true bermudagrass winter kill been encountered in Florida. That was in 1987 and was limited to a few putting greens in the Panhandle. In these cases, there was a direct correlation between the damaged areas and moderate to severe shade. However, this was before the introduction of the ultradwarf bermudagrasses and their widespread use. Not having previously experienced a similar prolonged stretch of cold temperatures with the ultradwarfs, there are definitely some concerns about the potential for low temperature injury, and even winter kill, on greens in the northern part of the state. Oklahoma State University research determined that the rel-

Photo Right: Thin brown roughs like this that lingered well into April are finally greening up. Photo by Joel Jackson

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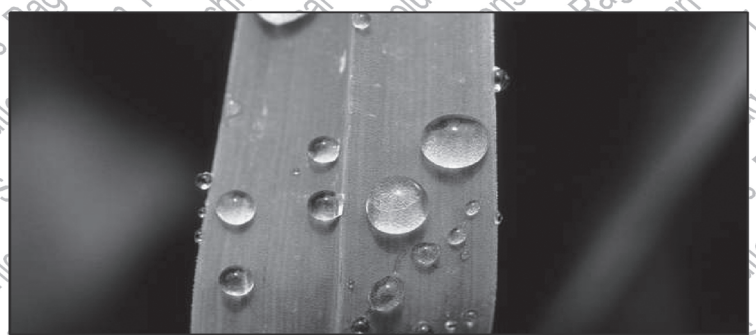
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ative low temperature tolerance of TifEagle, Mini-Verde, and Champion was 21.2, 21.6, and 23.4 degrees Fahrenheit, respectively. According to the Florida Automated Weather Network (FAWN), air temperature lows of 16 to 18 degrees Fahrenheit were recorded at various monitoring stations across the northern part of the state. Low soil temperatures of 33 to 39 degrees Fahrenheit also were recorded at these same stations.

While visiting a couple of courses in Jacksonville recently, it was reported that over the January 9th weekend, putting green rootzones were frozen solid, and it was impossible to change hole locations.

During visits to these courses, the ultradwarf bermudagrass putting greens were found to still be in a semi- to fully-dormant stage, but based on examination of profile samples, no significant injury or winter kill of the stolons, rhizomes, or root system

The Mid-Continent, Southeast and Florida Regions of the USGA Green Section have hosted Live Meeting webcasts to discuss . . . dealing with the freezing winter weather.

had occurred. There are still concerns about the possibility of low temperature injury and winter kill at some northern Florida courses.

The potential for problems is increased in locations with other stress factors, such as shade, excessive thatch, or restricted drainage. In locations where damage is suspected, harvesting plugs with a hole cutter, bringing the plugs indoors, planting them in pots, and putting the pots under a grow light, heat lamp, or in a south facing window, is suggested to assess if damage has occurred. The plugs should be

adequately watered, and within 7 to 10 days a green-up response should begin to occur.

If, after two to three weeks, the turf plugs are exhibiting 50 percent or less green foliage, significant cold damage will have occurred, and replanting might be required. Hopefully, this will not be the case, and with appropriate management practices during the late winter and spring, a full recovery can occur. It is recommended to keep everyone advised about the results of the damage assessment. The Mid-Continent, Southeast and Florida Regions of the USGA Green Section have hosted Live Meeting webcasts to discuss and educate golf course superintendents, course officials and golfers about dealing with the freezing winter weather. Check the USGA Green Section online portal at <http://gsportal.usga.org> for scheduled or recorded Live Meeting webcasts that review cold temperature damage and recovery measures. ■

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