

STMA IN ACTION

Colorado Chapter: CSTMA will hold a Mid-Summer Seminar on July 12 at Suplizio Field in Grand Junction, CO. A flyer will be sent with further information.

Make plans now to take part in "The 1996 Lawnmower-Man Open" Golf Tournament set for July 23 at the West Woods Golf Club in Arvada, CO.

For information on this seminar or the golf tournament, the Colorado Chapter or other upcoming events, call the 24-Hour CSTMA Chapter Hotline/FAX: (303) 438-9645 and leave a message, or contact: Troy Smith, Denver Broncos, at (303) 649-9000.

Florida Chapter #1: Note date change — the Florida Chapter meeting originally scheduled for July 16 has been moved to August 6 to accommodate the needs of Olympic Trials Soccer. The meeting site is the Orange Bowl Press Box. Meeting host, Dale Sandin, Orange Bowl sports turf manager, will give a slide presentation on Olympic Trials Soccer. A stadium tour will complete the day's activities.

The Florida Chapter will also hold a "Turf Rodeo" on August 29 in conjunction with the Florida Parks and Recreation Association (FPRA) activities at the Rolling Hills Country Club in Ft. Lauderdale.

For information on these activities, the Florida Chapter, and other pending events, contact: John Mascaro, (305) 938-7477.

Minnesota Chapter: MSTMA's second Workshop on Wheels has been set for Tuesday, July 16, in conjunction with a St. Paul Saints game. More details on this day-long event will be announced soon.

For information on the workshop, the Minnesota Chapter or other upcoming activities, contact: Brian Deyak at (612) 255-7223.

Midwest Chapter: "Training with the Bears" is planned for Wednesday, July 24, at the Chicago Bears Training Facility in Lake Forest, IL. The meeting will include a tour of the new state-of-the-art training facility.

For information on this meeting, the Midwest Chapter or other upcoming events, call: The Chapter Hotline, (847) 439-4727.

Iowa Chapter: For information on the Iowa Sports Turf Managers Association and upcoming activities, contact: Lori Westrum at The Turf Office at (515) 232-8222 (phone) or (515) 232-8228 (fax).

Southern California Chapter: The Southern California Chapter's next meeting is planned for August 31 at the Epicenter Stadium in Rancho Cucamonga. Activities include a stadium tour, a dinner and camaraderie break, and the opportunity to attend the game

between the Rancho Cucamonga Quakes ball team and a worthy opponent.

For information on this event, the Southern California Chapter and upcoming activities, contact: Chris Bunnell at (619) 432-2421.

STMA Chapters on the Grow

Arizona: For information on the newly forming Sports Turf Managers Association of Arizona, about upcoming events, or to find out how you can get involved, contact: Bill Murphy, City of Scottsdale Parks and Recreation Department, at (602) 994-7954.

Kansas: The newly forming Kansas Chapter is meeting regularly on the last Wednesday of each month. A mid-September seminar is in the planning stages. The same seminar format will be repeated during the designated week at different sites across the state — starting in east Kansas and then moving on to central and west Kansas locations.

For information on the monthly meetings, the September seminars — and especially to get involved — contact: Mark Schimming of Wichita Baseball, Inc. at (316) 292-2907, extension 205.

Make Plans Now!

STMA's Annual Conference and Exhibition — January 15-19, 1997, in Colorado Springs, CO — is now only about six months away.

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CHEMICAL LOG

Plant Growth Regulators for Turf

By Dr. David M. Kopec

Plant growth regulators (PGRs) can be used on turfgrass to (1) reduce seed head emergence, (2) reduce clipping production and mowing frequency, (3) reduce the frequency of striping sports fields by mixing the PGR with paint, or (4) favor one grass over another. Plant growth regulators are commonly referred to as either Type I or Type II PGRs.

Type I PGRs affect turfgrass growth by stopping cell division (plant makes fewer cells). Type II PGRs inhibit cell expansion (new cells are smaller than normal).

Not all PGR products are safe on all grasses, nor will all grasses respond safely to PGRs.

Application of PGRs for turf seed head suppression on low-maintenance sites should be made prior to seed head emergence, when the grass greens up. Type I PGRs are used for this purpose.

In general, PGRs should be applied when the turf is not stressed and has been growing actively prior to the application.

For regularly mowed turfs, PGRs are used mainly for reduced mowing clippings and frequencies. Type II PGRs are often used here, although Type I PGRs are also.

Before applications in these settings, make sure you follow these guidelines.

1. Make sure the grass has been adequately growing for a few weeks (green-up is complete). You want the Kentucky bluegrass, ryegrass and tall fescue to be fully green in the spring before you apply a PGR. Bermudagrass should be green from winter, and the nighttime temperature should be in the 60s or more before applying a PGR.

2. Mow regularly at the proper mowing height for the first two to three mowings. Avoid scalping at all costs.

3. Apply the PGR. Do not mow for three to four days.

4. Mow once more to make the treated turf "even" looking.

5. Follow label directions for rate applications and repeat intervals. Applying the maximum rate at one time initially may discolor the grass more.

6. Some discoloration or tip burning may occur. An application of iron as a spray before, during, or after the PGR application often helps the appearance along with the PGR. If you apply the iron with the PGR, make sure the PGR label says it's safe to make a "tank mix" with iron.

Suppression should take effect right after the "even-up" mowing and can last anywhere from three to five weeks with Type I PGRs and from four to six weeks with Type II PGRs, under ideal conditions.

Remember to follow label directions for rates and additional application restrictions.

Read the label closely to follow the guidelines for post-application irrigation. Certain PGRs are taken up primarily by the foliage and have a specific time interval when they must dry on the leaf. Others are absorbed through the roots and must be watered in via rainfall or irrigation.

Some PGRs work much better on cool season grasses, while others work better on warm season grasses. Some work on both, but the rate of product determines which grasses it controls.

DO NOT:

1. Apply PGRs to highly dormant turf.

2. Apply PGRs to heat, cold or drought stressed turf.

3. Apply over the label rate to try to extend the growth reduction period.

4. Apply large amounts of nitrogen to cause recuperation if growth reduction, burning or thinning is too severe.

5. Scalp the lawn before application of the PGR.

Displayed in the table is a partial list of commonly used PGRs on turf, their trade names and common names.

Dr. David M. Kopec is a turf extension specialist at the University of Arizona's College of Agriculture in Tucson.

Trade Name	Common Name	Absorption Site	Type	Turf
Telar	Chlorsulfuron	foliar/root	I	TF
Maintain	Chlorflurenol	foliar	I	many
Slo-Gro	Maleic hydrazide	foliar	I	many
Limit	Amidochlor	root	I	KB, TF, PR, FF
Embark	Mefluidide	foliar	I	many
Cutless	Flurprimidol	root	II	KB, PR, BM, ZY
Scotts TGR	Paclobutrazol	root	II	KB, PR, BM, STAG, ZY
Primo	Trinexepac-ethyl	foliar	II	many

Type I: Inhibits cell division and differentiation. Effective on seed head suppression and seed head development.

Type II: Inhibits cell division — produces dwarfed plants.

Grasses: TF = tall fescue, KB = Kentucky bluegrass, PR = perennial ryegrass, BM = bermudagrass, ZY = zoysia, STAG = St. Augustine.

ROOKIES

Debris Blower

The new Goossen BL-2000 belt-driven debris blower measures 40 inches in diameter and features a nine-inch-wide symmetrical blower fan with intake from both the front and rear to provide a total volume of 7,000 cubic feet per minute. Also available is the BL-1000 debris blower with a 27-inch diameter fan.

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To mix Primo with field paint, add 1/2 ounce of Primo into a spray tank for every gallon of finished paint. When used at recommended rates, Primo helps reduce turf growth and clippings by approximately 50 percent for four weeks.

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allows for the establishment of turf-grass year-round.

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Organics Like It Hot — Natural Turf Management, Part 6

By Marc McMullen

Since the late 1960s, when the first reported signs of turfgrass disease resistance were discovered, the turfgrass industry has been challenged to find new ways of suppressing increasingly resistant types of disease pathogens. Growing concerns about the effects of pesticides on the environment have made the use of new, improved fungicides a difficult direction for the turfgrass industry to head.

A new direction the turfgrass industry is taking is in the development of disease resistant cultivars of turfgrasses. Another path of study has led the industry to the use of natural organic fertilizers and composted materials for disease suppression. This direction emphasizes the use of organic fertilizers and composted materials not only as a nitrogen source, but also as a way to increase in the soil “antagonistic microorganisms” that can aid in the biological control of turfgrass pathogens.

Natural Organic Fertilizers

With natural organic fertilizers, you apply a nitrogen source that is contained in complex organic compounds. These compounds must first be decomposed by microorganisms in the soil before they can be used by turfgrass plants. Since the decomposition is moisture and temperature dependent, it increases as soil temperature rises.

This dependency on microorganisms to break down the organic compounds results in slower nitrogen release rates. Beard (1973) documented that characteristics commonly associated with organic carriers include:

- (a) a medium initial release rate,
- (b) low water solubility,
- (c) minimum foliar burn potential,
- (d) higher costs per unit of nitrogen,
- (e) reduced loss by leaching,
- (f) lower nitrogen analysis and
- (g) longer residual periods of four to eight weeks.

These characteristics can be put to good use to control nitrogen release and burn potential during the higher temperatures of the summer months.

The aim of fertilization in the summer is to maintain growth at lower rates. In the fall, natural organic fertilizers can use the lower temperatures to have a slow release mechanism and aid in the hardening-off process when limited shoot growth and maximum root growth are the goals.

One of the reasons natural organic fertilizers are not used in large quantities is that they are thought to produce a lower quality of turf than synthetic nitrogen sources. This can be true during the initial ratings and clippings yields. In research done at the University of Massachusetts, slow release natural organic materials including Hagerstown sludge (5-2-0), Milorganite (6-2-0), and Ringer Turf Restore (10-2-6) were compared to ureas (45-0-0) for quality and clipping yields.

The synthetic nitrogen carrier started out as a superior source of growth and quality. As the experiment continued into mid-July, the Hagerstown sludge product showed superior clipping yields and quality ratings. The increase in quality and clippings can be attributed to the increased nitrogen released as the soil microorganisms decomposed the organic compounds. The increase in yield and quality can also be attributed to the rise in soil temperature from early June to mid-July.

Another problem associated with some natural organic fertilizers is high levels of heavy metals. Realizing this, the Environmental Protection Agency regulates the amounts of heavy metals in these organic fertilizers.

Many other fertilizers also contain these heavy metals, but are not required to meet the stringent quality control standards like natural organic fertilizers. Mackintosh and Cooper (1993) documented that fertilizers derived from

leather tankage material may contain chromium at levels greater than 15,000 ppm, compared to sludge-based fertilizers that typically contain less than 100 ppm. Fertilizers derived from ironite have been found to contain more than 20,000 ppm of arsenic, compared to less than ten ppm in sludge-based fertilizers. Rock phosphate mined to manufacture super phosphate for blended fertilizers can contain cadmium levels around 100 ppm, while sludges typically contain less than ten ppm of cadmium.

The thought that natural organic fertilizers are high in heavy metals might be a concern, but these heavy metals can also show up in higher levels in many other types of fertilizers.

The fact that these organic fertilizers are slow release can also be a positive factor in the heat of the summer and during hardening off in the late fall.

Disease Suppression

Natural organic fertilizers and/or composted materials have been shown to suppress some turfgrass pathogens. This occurs due to the presence of microbial organisms. Gallant (1993) documented that these microorganisms are antagonists that, when found in sufficient numbers, can interfere with the activities of plant pathogens. Composted materials therefore not only strengthen turfgrass, but also provide microbial antagonists that can suppress diseases.

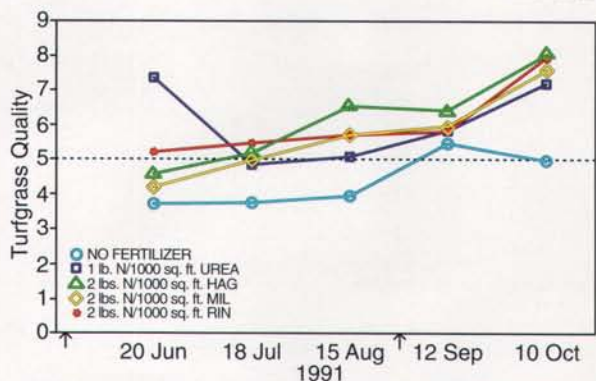
Organic fertilizers can lead to disease suppression on many types of grasses. On bentgrass greens, Soika and Sanders (1990) documented that excellent suppression of brown patch was obtained with Ringer Experimental I, Ringer Experimental 2, Sustane and ASC 66912. Ringer Experimental I and ASC 66912 provided suppression of dollar spot that was statistically different from the check and not statistically different from the Dyrene standard. Plots treated with Dyrene and ASC

66912 were rated highest in overall turf quality.

These reports showed that the diseases were not suppressed completely, but if conditions were right, some organic fertilizers could suppress the dollar spot and brown patch pathogens as well as fungicides.

This type of result was obtained in a similar study at the University of Rhode Island. Hull, Jackson, Liu and Alliare

Figure 1. Turfgrass quality in response to fertility programs. Arrows indicate fertilizer applications.



(1991) documented in a test with eight composted organic wastes and two organic nitrogen fertilizers that incidence of dollar spot was reduced somewhat by fertilizers having higher levels of soluble N.

This does not necessarily show that organic fertilizers suppress the dollar spot pathogen, since one of the cultural management practices to reduce dollar spot is to increase nitrogen. So, it is hard to say whether the disease is reduced by the

antagonistic microorganisms produced by the organic fertilizers or by the increase of nitrogen in the soil.

But, in the case of brown patch an increase of nitrogen does not reduce the pathogen. Actually, a higher amount of nitrogen can increase the severity of the disease. Therefore, there may be some antagonistic microorganisms produced

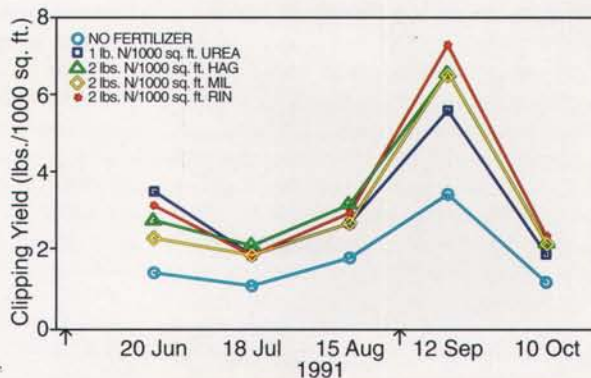


Figure 2. Clipping yield in response to fertility programs. Arrows indicate fertilizer applications.

by the organic fertilizers working to resist the brown patch pathogen.

Topdressing Strategies

With more and more golf courses on frequent topdressing programs, studies have been done to test disease suppression using either organic fertilizers or composted materials. As topdressing materials are added frequently to tees and greens, organic fertilizers and composted materials can be incorporated into the

continued on page 26

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Organics Like It Hot

continued from page 25

topdressing to suppress diseases and decrease the amount of fungicides needed to control these pathogens.

Nelson and Craft (1989) documented in a study on creeping bentgrass greens that topdressings amended with either Ringer Compost Plus, Ringer Greens Restore or Sustane were effective in suppressing brown patch. Control of brown patch with these materials was as good as a high rate of the fungicide Banner. Also, topdressing prepared from a sludge and leaf compost significantly reduced brown patch severity as compared with untreated plots.

Most composts used in this study were one year old or younger. These immature composts were ineffective, particularly the sewage sludge composts.

A similar study also was done on an annual bluegrass putting green for dollar spot suppression. Nelson and Craft (1989) documented that only topdressing amended with Ringer Compost Plus and Ringer Greens Restore significantly suppressed dollar spot development. The level of disease control was as good as that provided by Banner. Topdressing

formulated with composts were ineffective in suppressing dollar spot. It was concluded that some organic fertilizers may reduce damage from dollar spot when applied to putting greens as a topdressing. The amount of disease suppression may have increased if the rates of nitrogen were increased.

Another study of disease suppression using organic fertilizers was done on a perennial ryegrass stand. Nelson and Craft (1989) documented that topdressing amended with Sustane significantly

suppressed red thread development as compared to untreated plots. Topdressing formulated with composts were ineffective in suppressing red thread. It was concluded that some organic fertilizers may reduce damage from red thread when applied as a topdressing.

Eric Nelson (1992) did an extensive amount of research on the suppression of diseases using topdressings amended with organic fertilizers and composts. There was no one product that significantly suppressed all types of diseases. The

Table 2
Biological Suppression of Various Turfgrass Diseases
With Compost-Amended Topdressings^a

Topdressing Amendment	% Disease Control				
	Dollar Spot	Brown Patch	Red Thread	Typhula Blight	Pythium Root Rot
None	—	—	—	—	—
Greens Restore ^b	65.7*	66.7*	8.5	0.0	47.4
Sustane	30.3	75.0*	78.7*	15.2	52.6*
Sludge Compost A	34.3	41.7*	14.9	69.7*	57.9*
Brewery Compost	10.1	25.0	36.2	69.7*	36.8
Leaf Compost	4.5	38.9	0.0	—	—
Horse Manure Compost	0.0	0.0	0.0	54.5*	—
Sludge Compost B	0.0	8.3	0.0	—	—
Fungicide Standard ^c	97.0*	88.9*	—	33.3	42.1

^a Determined 30, 13, 27, and 19 days post-application for Dollar Spot, Brown Patch, Red Thread and Pythium Root Rot, respectively. Gray snow mold evaluated in the spring (April), 6 months after the last fall application.

^b Greens Restore is an uncomposted organic fertilizer composed of plant and animal meals.

^c Fungicide standard for all diseases except Pythium Root Rot consisted of Banner applied at the rate of 4 oz./1,000 ft². For Pythium Root Rot, Subdue was applied at the rate of 2 oz./1,000 ft².

Numbers followed by an (*) indicate statistically significant levels of disease control as compared with untreated plots.

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likely reason is that each product nurtures a different type of antagonistic microorganism, and these microorganisms are specific to one type of disease. If this is true, then reproduction of these microorganisms could produce a biological method of suppressing that specific disease. Also, where the organic fertilizers do suppress diseases, they do as well if not better than the fungicide standard for that disease. Thus, if you used the right organic fertilizer for a specific disease, you could reduce the amount of fungicide needed to control it.

If the composted material is older, it seems to suppress higher amounts of diseases. Nelson (1991) documented that suppression of a number of turfgrass

diseases by composts occurs if the compost is well aged or mature. Our research indicates that the level of disease suppression in mature composts is due to the intense microbial activity associated with these composts.

Composts Coming of Age

Composts, if managed properly, can be a beneficial part of turfgrass management. With the increased pressure on limiting the amount of organic wastes (mostly leaves and grass clippings), compost piles can be an alternative to the local landfill.

If the compost pile is allowed to mature and the right microbial activity is present, compost can be a source of

disease suppression and a reduction of fungicide usage.

The use of natural organic fertilizers can have many benefits in comparison to the normal sources of nitrogen. Natural organic fertilizers are slow release sources of nitrogen with low foliar burn potential. Used at the right rates, they can give as good, if not better, quality ratings and clipping yields than synthetic sources.

The amount of heavy metals that was once a big drawback to organic fertilizers is now greatly reduced. The use of some organic fertilizers and even some mature composted materials in either amended topdressing form or as a straight nitrogen source can be a tool in disease suppression.

As environmental concerns mount and more and more of the pesticides we take for granted are removed from our shelves, biological means of suppressing diseases will need to increase. With the use of organic fertilizer, fungicide use can be reduced and the cost of turf management reduced.

The type of microbial activity produced by organic nitrogen sources needs to be researched more, so the results in disease suppression can be more practical. Until this occurs, the use of organic fertilizers will remain minimal. □

Table 2
Fertilizer Products Used in the Study

Product	Nitrogen Source
Hagerstown (5-2-0)	Heat-dried sewage sludge
Milorganite (6-2-0)	Heat-dried sewage sludge
Ringer Turf Restore (10-2-6)	Hydrolyzed poultry feather meal, blood meal, wheat germ and bone meal.
Urea (45-0-0)	Synthesized from ammonia and carbon dioxide

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INDUSTRY HAPPENINGS

TURF FOR THE LONGHORNS

The West Coast Turf "Stadium Sod Tour" continues with the installation of 90,000 square feet of sand-grown Tifway 419 hybrid bermuda sod for the Longhorns at the University of Texas' Memorial Stadium. The renovation was headed by the Motz Group, a Cincinnati-based contracting firm.

The sod was delivered to Austin, TX, from Bermuda Dunes, CA, in ten refrigerated trucks and was installed in 42-inch-wide "Big Rolls" by West Coast Turf crews in less than two days. Memorial Stadium is the sixth major stadium stop for West Coast Turf in 1996. The other five have been Super Bowl XXX at Sun Devil Stadium in Tempe, AZ; Dodger Stadium in Los Angeles, CA; Jack Murphy Stadium in San Diego, CA; 3 Com Park at Candlestick Point in San Francisco, CA; and Anaheim Stadium in Anaheim, CA.

PGMS LAUNCHES GROUNDSKEEPER PROGRAM

A Groundskeeper Certification program has been added to the 15-year-old Certified Grounds Manager program by the PGMS. As the CGM program has been specifically designed for the grounds manager level of professional, the new Groundskeeper program is intended for those reporting to the manager and will not focus on supervisory knowledge. The objective of the program is to provide for the establishment of minimum standards or level of accepted competence in ground care and to provide for a system of review and preparation for a uniform national examination.

Qualifications for the program are a high school diploma or GED plus two years experience in the grounds maintenance field. Application costs are \$150 for PGMS members or \$250 for non-

members. For more information, contact: PGMS, 120 Cockeysville Road, Suite 104, Hunt Valley, MD 21030. Phone: (410) 584-9754. Fax: (410) 584-9756.

SCOTTS HONORS THREE

Three Scotts Distributor Advisory Council members were recently honored for their contributions to the company and to the industry. Ken Legette, president of Graco Fertilizer Co., Cairo, GA; Lon Records, president of Target Specialty Products, Cerritos, CA and Curt Thimm, president of E.C. Geiger Corp., Harleysville, PA, each received an award that recognized their dedication to the council and that commemorated the completion of their three-year terms.

Eight horticultural distributors and seven Scotts managers serve on the council, which was formed in 1992. The Distributor Advisory Council meets annually to discuss common problems and opportunities the members face in the marketplace.

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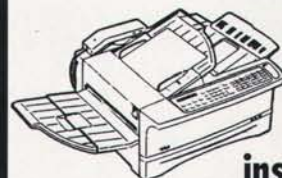
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