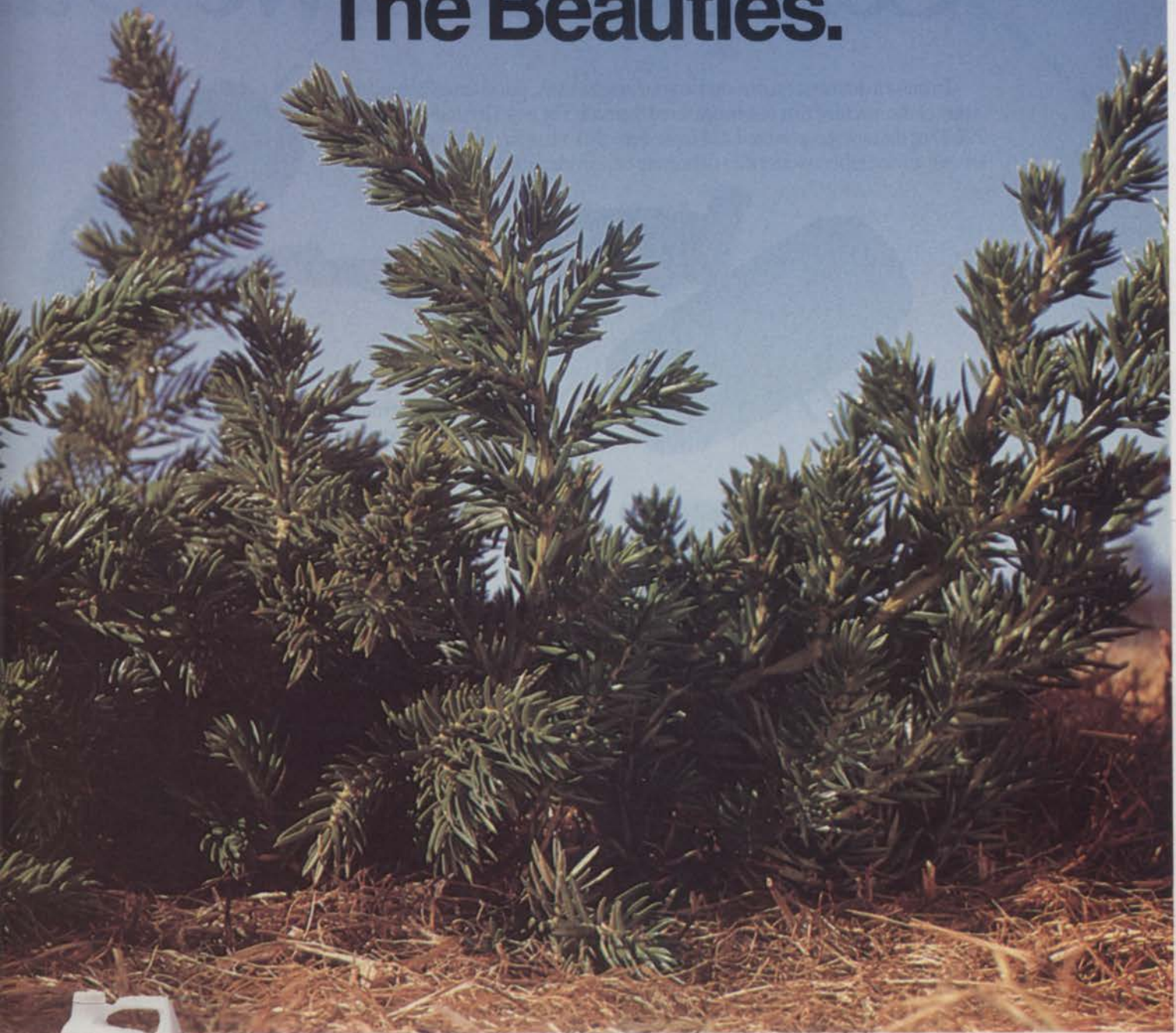


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PGRs: LESS TIME, FEWER CLIPPINGS

Yard waste restrictions and busy mowing schedules persuade companies to add plant growth regulators to their arsenals.

by Doug Oberman, PBI/Gordon, Kansas City, Mo.

Proof of the way science benefits industry can be found in the renewed interest in plant growth regulators (PGRs) for reducing yard waste and mowing time.

Using PGRs on fine turf runs contrary to the conservative attitude of the turfgrass professional: that quality turf depends on how rapidly and vigorously the grass grows. But the reality of landfill depletion has changed many attitudes.

"As clipping management and yard waste becomes a bigger problem, we see a larger opportunity for PGRs, especially when they are used to complement controlled release nitrogen (N) feedings," says Dr. Milt Kageyama, director of product development at O.M. Scott & Sons. Scott's regulator product, TGR Poa Annu Control, is described as a controlled-release fertilizer-based product, designed to halt the growth of poa and encourage the growth of desirable species.

Stay on schedule

Like other technological developments

in the turf industry, it has taken several years for PGRs to get up to speed with the turf manager's needs. While manufacturers were striving for seven or eight weeks of growth suppression, with reduced mowings, the maintenance contractor simply wanted a temporary

Clippings and other yard debris make up an estimated 17 to 20 percent of waste going into U.S. landfills...for now.

solution to the peak growth during April or May. PGRs' benefits continue beyond spring, and help keep crews on schedule during peak growth seasons.

Using PGRs on highly-managed turf allows the grass to be put "on hold," in its best condition. This is a

new realization, since prior marketing strategies had targeted less maintained, lower quality turf. Discoloration was a down-side risk that had to be overcome before PGRs could be accepted in well-maintained lawns. But by reducing the dose of active ingredients, "spoon-feeding," or sequential applications, a tank mix of two different active ingredients, and proper timing can minimize or eliminate off-color. Liquid iron-nitrogen product may also provide this added benefit.

Points to consider

Growth regulators should be used in low-traffic areas (not to be mistaken with "no-traffic"). More diligence is also needed when scouting for turf insects or diseases.

These pests may not be noticed in untreated grass, but may cause more pronounced symptoms if left uncorrected in PGR-treated grass because the turf may not be able to grow past these problems. Also, sprinkler volume may need to be reduced, so that





Dan Rosen, president of Paragon Lawns in suburban Minneapolis and his wife/partner Jill, use an Embark-Limit combination at industrial parks. The product delivers five weeks of regulated growth.

slower-growing grass isn't over-watered.

Inhibiting the stem and seedhead development can be an important benefit. Timely treatment is required: generally, no later than the second or third mowing in the spring, or seed-head formation will have already begun in Kentucky bluegrass or tall fescue.

Turf quality tends to decline once the grass starts throwing seedheads, which the plant continues to do for some weeks, even when they are repeatedly mowed off.

Some lawn care companies and maintenance contractors are offering

PGRs to condo/homeowner associations and homeowners with low-traffic ornamental lawns. Turf maintenance bills are lower, and contractors can offer lower bids when a PGR is part of the program.

Reports from the field

Gator Lawns of Baton Rouge, La., sprayed PGR treatments on a number of residential St. Augustinegrass lawns last season.

"We used a pint of Embark 2S plus 2.75 gallons of amine compatible liquid iron per acre and got around seven or eight weeks slowdown in grass growth," says mana-

ger Mike Spalding.

"Two to four cuttings were enough to keep the PGR-treated lawns looking as good as neighboring lawns mowed seven or eight times."

Removing more than 1/3 to 1/2 of the grass blade can be stressful to grass plants.

"Whacking off four to six inches of grass in one cutting just isn't treating the lawn or your customer right, no matter what your excuse may be," says Dan Rosen of Paragon Lawns, a total-care landscape maintenance contractor in Edina, Minn. Rosen manages office parks and industrial plant lawns with a light rate of mefluidide and a tank-mix of mefluidide and amidichlor.

Rosen feels the mefluidide alone, costing under \$20 per acre and providing three to four weeks of growth suppression, can be used to "tame" the peak season growth, when the client wants weekly mowing.

He says the tank-mix gives up to six weeks duration of slowed growth, and allows Paragon to cut mowing in half.

Renovation aid

PGRs can be used during turf renovations, when the new grass is slit-seeded into existing turf. You can use a PGR to put the existing grass on hold, followed within a few days by overseeding. The absence of significant competition from existing grass allows the new seedlings to better compete for nutrients, moisture and light for several weeks, and reduces mowing damage. The original lawn returns to normal within five to six weeks.

In southern climes, golf greens can be sprayed with a PGR to suppress

TABLE 1

Fine Turf Plant Growth Regulators

	PRODUCT	MODE OF ACTION	PURPOSE/EFFECT
TYPE I GROWTH REGULATORS Suppress or inhibit growth and development	<ul style="list-style-type: none"> Amidochlor: LIMIT* (PBI/Gordon Corporation) Mefluidide: EMBARK* (PBI/Gordon Corporation) 	Suppresses growth and development by interrupting cell division and cell elongation at the crown. For control of tiller and seedhead formation. LIMIT - Root absorbed EMBARK - Leaf absorbed	Effective for controlling growth, tillering and seed-head formation. Post suppression greening occurs.
TYPE II GROWTH REGULATORS Suppress growth only	<ul style="list-style-type: none"> Flurprimidol: CUTLESS* (DowElanco) Paclobutrazol: Scott's TGR* (O.M. Scott and Sons Co.) 	Often referred to as <i>anti-gibberellins</i> which reduces growth by suppressing internode elongation. Tiller development and growth continues, but new plants are dwarfed. Both-Root absorbed	Used to control growth, enhanced greening, by concentrating chlorophyll, and turf thickening. Reduces competition of <i>Poa annua</i> .

Table adapted from materials published by Dr. John Kaufmann, Monsanto Ag Co.

WHAT'S OUT THERE: TWO TYPES OF GROWTH REGULATORS

Type I regulators: slower growth, seedhead suppression

If applied to emerging seedheads in spring, Type I growth regulators suppress turf growth and inhibit seedhead development. Applying PGRs before nutrient flow kicks in spares the root system from energy and mass depletion.

"The turf topgrowth is suppressed (not stopped), and the roots remain viable when using most PGRs," says Dr. Bruce Branham of Michigan State University's department of crops and soil science.

According to Branham, since the foliage is only slowed, photosynthesis remains active. The energy produced is stored in the roots and stem bases. Therefore, Branham explains, when the regulator wears off, a deeper green color occurs, due to the release of pent-up energy.

Embark Lite, a newly-approved, Type I mefluidide label from PBI/Gordon, adapted for fine turf uses by reducing the active ingredient, can also be used alone as a "mowing aid."

Duration of control is rate-related, but is generally targeted for three to four weeks of growth suppression. This application can make a significant difference in mowing ease and reduced clippings, especially if the application is timed to periods when grass growth and mowing pressure are the greatest. PBI/Gordon says the product can be used with good results in spring and fall, in most areas.

Of all the PGRs, mefluidide is probably the favorite product for tank-mixing with other growth regulators. It provides seedhead suppression at low rates, which is often a shortcoming of other PGRs.

A newly-developed tank mix recommendation for fine turf combines Embark Lite with amidochlor (Limit), the fine turf regulator developed by Monsanto and recently acquired by PBI/Gordon. Tank-mix directions reduce the label rates of each product, which provides a substantial margin of safety. There is generally no phyto or browning even when overlaps or over-applications occur.

Type II: density, color for poa control

Golf course superintendents favor regulators which enhance turf color and density. Of these, DowElanco's Cutless and Scott's TGR Poa Annu Control are technically referred to as anti-gibberlins. Initially meant for bentgrass greens and fairways, these PGRs are now noted for their contributions to density, color, playability and clippings reductions.

The growth reduction action of Type II PGRs has been referred to as a "miniturization" of the above-ground parts of the grass plant.

Scott's TGR (paclobutrazol, or PP333), has been well-received by the golf industry. More than 3,000 courses have used the product, says Jim Fetter, O.M. Scotts & Sons' vice president of professional products.

In addition to its fertilizer-based TGR Poa Annu Control, Scotts has a new, 50-WP sprayable formulation, TGR Turf Enhancer.

DowElanco's Cutless (flurprimidol) is used by superintendents for increased green-up, improved surface density and reduced clippings, says Mike Shaw, DowElanco's product development manager. With Cutless, sequential application is recommended.

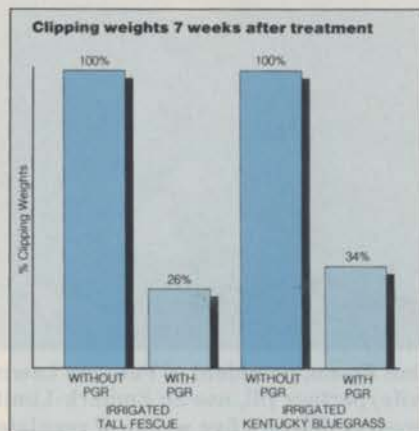
"Instead of applying Cutless all in one blow, spreading out the applications delivers the product to the plant as it needs it," says Shaw. Besides the added turf quality, Shaw says the use of Cutless in greens and fairways increases bentgrass populations.

Doug Obermann □

existing warm-season bermudagrass, followed by overseeding with ryegrass, *Poa trivialis* or other winter grasses. In spring, winter putting surfaces can be suppressed to help "release" the growth of dormant bermudagrass.

One of many tools

The benefits of PGR use for profes-



sional turf management increase as the problems facing the turf manager increase.

Says one manager: "We need something that can keep the turf growing slower, maintain green color, and not cost an arm and a leg.

"There is no one panacea, but what can help is a program for improved mowing equipment, fertility (via slow-release N), efficient watering and plant growth regulation. These are the tools which will help our industry survive." **LM**



Doug Obermann is product sales specialist for plant growth regulators at PBI/Gordon Corp. He received his Master of Science degree in agronomy from Iowa State University.

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IPM: ON THE VERGE OF ACCEPTANCE?

Integrated pest management is gaining ground in some circles as the industry realizes it's not meant to 'do away' with anything.

by Jack Simonds, contributing editor

Run the Integrated Pest Management (IPM) issue up the flagpole and see how it flies.

The IPM banner has been flapping heartily in the winds as researchers, industry watchers and green industry practitioners alike enjoy a robust debate over IPM: its mission, its benefits, even its definition.

To hear Dr. Gerard Ferrentino tell it, IPM methods have not simply carved a niche in the landscaping industry. IPM is on the verge of a full arrival.

"There is no doubt that pesticides work and are an important tool," Ferrentino says. But, the ornamentals IPM coordinator at Cornell University also notes: "In an IPM program, our main focus is how to use pesticides better and maximize their use. *IPM does not mean do away with chemicals.* I think we'll see its use grow tremendously in the next couple of years."

The proving ground

The test area for Ferrentino's conclusions came from just outside his office window: the 310-acre Cornell University itself.

Working with the university's ground maintenance crews, the turfgrass science program sought to reduce pesticide use employing IPM methods which include soap and oil applications, pruning, plant selection, vacuuming, turf removal and other alternatives.

The pest maintenance program was employed campus-wide on 79 acres of trees, 20 miles of walkways, 12 to 15 miles of roads and about 114 acres of parking lot space; a good mix of land uses in a concentrated space.

"(Alternative) methods work and when applied at the right time are safe to use," Ferrentino asserts.

IPM, if not on the verge of full and widespread use, is certainly a popular commodity on the conference circuit. Scarcely a conference in the green industry convenes without IPM figuring prominently on the agenda.

IPM is hot stuff, to be sure, but for the "mom-and-pop" landscape manager, the question remains: Is IPM a passing fancy or are today's murmurings a foreshadowing of things to come?

What's in the way?

Dr. James Wilkinson, chief operating officer with Lawnmark of Hudson, Ohio, says "practical obstacles" still exist for widespread IPM use.

Wilkinson believes that some

stumbling blocks remain:

● **Customer expectation.** In some cases, Wilkinson argues, homeowners finding the lone dandelion or single grub will insist on a new, lawnwide spraying, which "flies in the face" of the intent of IPM.

● **Employee training.** With the inherent high turnover in the lawn care industry, keeping a "true practitioner" of IPM on staff can be difficult.

● **Follow-up monitoring.** Here, Wilkinson notes that with many landscaping firms basing profits on number of lawns or square feet serviced in a season or simply the amount of billing dollars per season, field applicators and technicians simply "don't have the time to get down on their hands and knees to do monitoring or diagnosis."

Follow-up monitoring, all connected with IPM agree, is a cornerstone to its success.

Nonetheless, Wilkinson and Dr. David Sheltar, entomologist with Ohio State University's Cooperative Extension Service, agree that IPM has a place in the industry and time may allow its foothold to become firmer.

"We need to consider all the control options. All too easily we reach for the container of pesticide and take a whiz at it and hope that will take care of the problem," Sheltar says.

Localized tracking

Sheltar agrees that the industry needs to focus on finding "efficient ways of monitoring pest activity."

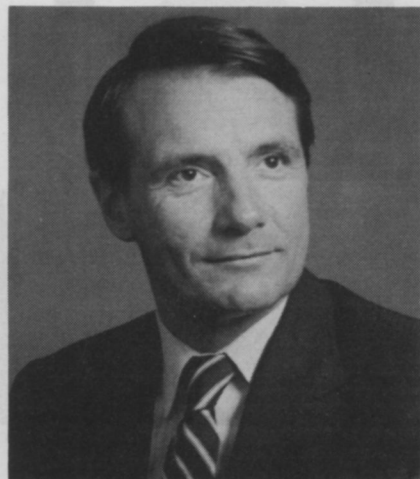
Sheltar advances the notion of monitoring by neighborhood, charting pest, weed and disease infestations which may occur commonly to a localized area and perhaps employing billbags, pitfall traps or other non-chemical techniques as dictated by common sense.

Sheltar laments about the "hose jockey" or "nozzle head" characterization of the green industry; IPM makes sense, he says, when one considers that "no one single control will succeed."

continued on page 70



Dr. Gerard Ferrentino: IPM will grow "tremendously."



Dr. James Wilkinson: Customer demands often run counter to IPM.

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IPM from page 68

"(IPM) is not an organic (or) biological program. It can contain both those elements. It is also not a 'no-pesticides' program," Shetlar observes.

The "no pesticides" aspect of IPM surfaces time and again as specialists gather to air out where the practice is and where it is headed.

Ferrentino, for example, pens an "IPM Corner" in a department newsletter, "Cornell University Turfgrass Times." In the fall issue, he highlighted IPM's overall definition as a preventive practice and its techniques for success which include monitoring and record-keeping, not dodging the common complaint that these elements often receive resistance because of perceptions they lower productivity.

"IPM practitioners," wrote Ferrentino, "follow fundamental pest management principles to develop strategies that integrate chemical, biological, cultural and mechanical methods to prevent or control pests."

A good working definition and one likely not to cause much consternation, it is true.

But as IPM continues as a hit on the convention circuit, it still apparently isn't playing well in Peoria. **LM**

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