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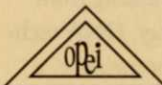
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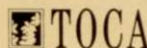
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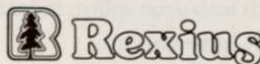
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Circle 131

Genetic turf research needs support

By RON HALL/ Managing Editor
Genetically engineered turfgrass is coming, but when it will become commercially available isn't clear. What's clear is that transgenic research in turfgrass lags far behind similar research in food



Dr. Peter M. Gresshoff says U.S. turf industry must begin supporting genetic research.

and fiber, said Dr. Peter M. Gresshoff, plant molecular geneticist at the University of Tennessee.

The turfgrass industry has gotten no financial support from federal or state agencies for research in gene splicing, claimed Gresshoff. It will have to do more on its own to advance the knowledge of the genetic material within the many species and varieties of turfgrass.

"We're in a situation of cultivar development which is equivalent to the Babylonians 3000 years ago who walked around the fields (and said), 'Oh, here's a good plant.

Let's pick the seeds of this and see how well it grows,'" said the scientist at the Tennessee Turfgrass Conference this past January.

The future is here

That's not the case in agriculture.

In fact, chances are that you're eating genetically engineered food. Or, perhaps, wearing clothing made of transgenic fiber. Here's a short list of genetically altered crops being grown (or soon to be grown) commercially: corn, cotton, potato, soybean, squash, tomato, and canola.

These plants exhibit the characteristics of genes isolated from other plants or animals. These genes are inserted into the DNA of host plants, for instance, to make them resistant to certain diseases or insect pests. Or to make them more efficient users of nitrogen or water. The list of crops and of the number of genes are expanding, more or less in order of the economic importance of each crop.

Research into gene splice, indeed, is accelerating. Rapidly increasing are:

- ▶ the applications for genetic engineering,

- ▶ the number of organisms being "improved",
- ▶ the rapidity with which engineered products can be brought to the marketplace.

A Wisconsin company, for instance, "piggy-backed" seven new properties into a new corn variety in just 1½ years. The process would have taken 10 to 12 years using traditional plant breeding, said Gresshoff.

Big hurdles

While researchers at Rutgers and Michigan State University have reportedly engineered a bentgrass resistant to the herbicide Finale, the industry, in general, faces big hurdles in developing turfgrasses with improved characteristics through gene splicing. Not the least of these challenges is the turfgrass itself, both the number of species (and people or companies championing individual species) and the fact that grasses—like other cereals—have lots of DNA, said Gresshoff.

"Right now there is not a single (genetic) map for any turfgrass. We're not even close," he added. "We first have to get the map to understand where the genes are functioning in the turfgrass."

While new varieties of turfgrass arising from gene splicing appear to be years away, DNA technology is being used in turfgrass. For instance, a gene "marker" technology can be used as a diagnostic tool.

"DNA fingerprinting is a reality right now," said Gresshoff. "We can see if something is a legal Tifway 419 variety or not. We can check production, identify contamination."

Gresshoff urged the U.S. green industry to support genetic turfgrass research at the university level. Otherwise, he hinted, it could be looking to other countries or huge multi-national companies for the technology to produce the next generation of improved varieties.

Oldest college track to be renovated

Historic Edwards Stadium at the University of California—the country's oldest pure collegiate track facility—will be renovated soon as part of a \$3 million project.

The stadium's existing track and infield areas will be reshaped and resurfaced to accommodate both track and soccer competition. U.Cal officials feel the upgrade will

make Edwards an attractive site for future NCAA and international track and soccer events.

CMX Group, Inc., of Phoenix, Ariz., is handling the project with the Cal Athletic Department as primary consultant and engineer.

CMX recently handled the conversion of UCal's Memorial Stadium from arti-



ficial turf to natural grass.

For the Memorial Stadium project, CMX removed the field's 2-1/2-foot crown; installed Kentucky Bluegrass sod atop a specially-designed, sand-based, gravity-flow drainage system with fully-automated field irrigation technology.

"We had some interesting sub-surface issues," says CMX President Mike Lloyd.

"We had to avoid Strawberry Creek, which flows di-

Built in 1923 overlooking San Francisco, UCal's Memorial Stadium went from grass to artificial, and back to grass again.

rectly under the stadium. During construction, we also encountered natural underground springs, which had to be intercepted, and some unstable soil which had to be treated."

The field at Edwards Stadium will feature a natural grass field system similar to that at Memorial.



CMX Group designed, oversaw the 5-month Memorial Stadium construction project and installation of new Kentucky bluegrass field.

Snow removal symposium

The Snow & Ice Management Association holds a "Snow & Ice Symposium", May 7-9, at the Airport Marriott, Pittsburgh, Pa. Topics include pricing, weather reporting and insurance. Cost is \$295 for members, \$365 for non-members. Call 814/456-9550.

Penn turf flies high

Three ounces of turfseed is going with Dr. James Pawelczyk when he blasts off in the Space Shuttle Columbia on April 2. Pawelczyk, is an assistant professor of physiology and kinesiology at Penn State University. The grass seed is from experimental lines of Kentucky bluegrass and perennial ryegrass developed at the university

Dr. David R. Huff, assistant professor of turfgrass and genetics at Penn State, selected the seed types. He said genetically identical seeds will be kept on Earth to compare with the shuttle seeds. Huff says this is the first time turfseed has flown in space.

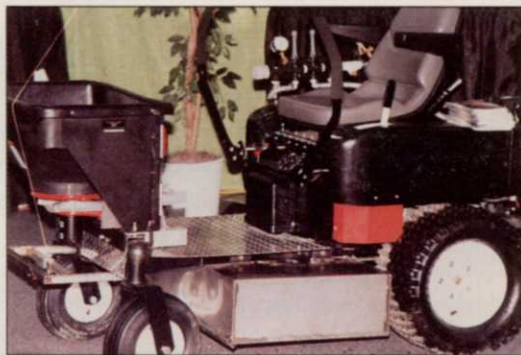
At the completion of the 16-day shuttle mission the seed will be planted, and one square foot of the resultant "space turf" will be installed at each of the 24 campuses in the Penn State system.

Students Charles C. Eagle, Michael S. Bell, Margaret M. Bloch and Michael A. Roofner suggested the turfseed which won over other suggestions such as taking along a cardboard Joe Paterno and a football.

WHAT'S great IN '98?

*The editors at LANDSCAPE
MANAGEMENT pick some new
products or ideas that will get
some attention in the Green
Industry this year.*

Motorized turf applica-
tion unit from S.N.G.
makes big properties
easy to treat.



The new year brings a host of new Green Industry products and services. We've got more than a few to show you that may be of service.

Some of these products or services will catch on and become immediately valuable to segments of the industry. Past examples include the DTN Weather Monitoring System which quickly became indispensable with golf course superintendents and athletic field managers. Or the Dingo Digger line of construction equipment introduced into the United States a couple of years ago.

Recent chemical introductions that became industry-wide hits include Merit insecticide from Bayer, Primo growth regulator from Ciba, and Heritage fungicide from Zeneca. Other exciting new chemistries that will greatly aid turf professionals are the insecticides Conserve from Dow AgroSciences and Mach 2 from Rohmid.

Unfortunately, LANDSCAPE MANAGEMENT is going to press with this issue just before the 1998 GCSAA Show. Otherwise we'd show you the new products unveiled there. Look for them in our March issue.

Check out the following products and services. We're betting some of them will become helpful to many of you in 1998.

An LCO's dream

The Lawn Cad 2000 is a zero-turn-radius, motorized (17 hp Kohler engine) spreader/sprayer that makes chemical applications a snap on larger residential properties, commercial sites and ball fields. It's built by S.N.G. Equipment in Plain City, Ohio, an outfit that knows the application business since it uses these same units daily. The Lawn Cad 2000 can fit through a 40-inch gate, can spray either from the front or a boom unit on the rear; it can hold and spread 100 pounds of granular material; and it has a spray wand for making spot treatments. An owner/operator can spray an acre in about 12 minutes, a football field in about 17 minutes. One person can treat 500,000 sq. ft. in a day on one of these stainless steel/aluminum babies if he sets his mind to it, claims S.N.G. Call 614/873-3719

New non-restricted fumigant

Basamid granular soil fumigant from BASF Ag Products is a new way to sterilize soil for new or renovated golf course greens. It's significant because the

fumigant methyl bromide may be removed from the marketplace by 2000.

Basamid is neither a liquid nor a gas; it's a white granular. Blended with a complete soil mix before construction, Basamid controls weeds, nematodes and soil diseases, claims BASF. Moisture in the soil converts Basamid into active substances that diffuse as a gas, destroying fungi, bacteria, nematodes and soil pests.

Keep a level head

At first glance you might think a seat-leveling system is not such a big deal. But if you do any cutting on a slope, you'll be glad you've got one on your mower. Burkes Trading International in Lawrence, MA, (508/689-9330) is the U.S. distributor of this electrically controlled unit that was developed in Sweden. The seat is designed to keep an operator level to either 10 to 15 degrees. It may begin showing up on some production U.S. equipment soon.

Creeping-bluegrass available

Peterson Seed, Savage, MN, offers its Peterson's Creeping-Bluegrass for primary use on golf course greens. Dr. Donald B. White and the University of Minnesota developed this grass from *Poa annua*. But this grass, claims Peterson, is dark green, forms a uniform and dense turf (no grain), thrives at mowing lengths of 1/8 inch, is resistant to many diseases, winter hardy and has a stoloniferous spreading habit. The first release of creeping-bluegrass has been named DW-184 with limited supplies available. Call 800/328-5898.

Millennium arrives

Steve Tubbs at Turf Merchants, Tangent, OR, says limited quantities of Millennium, its first 4th-generation turf-type tall fescue, is available. Full production is set for this year. He describes Millennium as dark green, with medium-fine leaves and medium density. TMI has also released Paragon, a new perennial ryegrass seed. Both varieties were developed at Rutgers. TMI's number is 503/227-5547.

Useful labor 'product'

Consider this next item a "product" to improve labor efficiency and labor relations. Jennifer Thomas, just over a year ago, started Spanish Training Services, Inc., a service to teach U.S. employers and managers some practical Spanish and also to help them become aware of cultural differences in the workplace. Thomas is an effective teacher and communicator and she focuses her program on the specific green in-

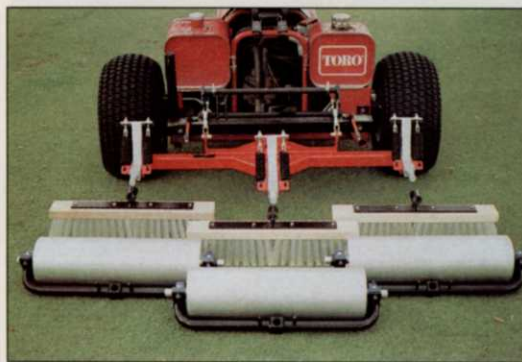


dustry, work-environment vocabulary. Because of the growing importance of Hispanic workers in the green industry, Thomas has also developed a Spanish Training home study course for green industry managers. It should be available in March. Contact Jennifer at 847/491-0099 or 800/491-0391.

Roll, spike or drag

Alpine Engineering's Roller/Spiker/Drag Brush System can roll 18 average-size greens in about 2 hours, or spike an average-size green in five minutes with over 300 slices per foot. The drag brush attachment—down pressure controlled by the operator—can be used to lightly lift grass blades prior to mow-

Jennifer Thomas (standing) helps U.S. Green Industry employers to break the language barrier and work more effectively with their Hispanic employees.



Alpine's single unit can roll, spike or drag brush a golf green.

ing to help eliminate grain, or to drag in the heaviest top dressing. Call Alpine in Wyoming at 307/654-7428 for more details.

Franchise opportunity

Castart by NatureScapes, headquartered in Tucson, offers franchises for selling and marketing Castart's building blocks components for rock water-

falls, streams, pools, ponds and spas. Castart's building block components are three times stronger and more flexible than concrete, the company claims. "For the right candidate, the total investment can be as low as \$12,800-\$25,000, and that includes an exclusive area of approximately 340,000 people," says president David Weinert. Call franchise vp Donald Gompers Isaacs at 520/623-8858 or 800/871-8838.

For tree health

Imisol is a new micro-injection product from The Mauget Company, Arcadia, CA. It contains Imicide insecticide and Fungisol fungicide for single-treatment, targeted control for both tree insects and diseases. Imicide is a systemic insecticide for many in-

These components are manmade, but they look real. Castart offers franchises for installations.



sects; Fungisol is fungicide for anthracnose, many cankers, fusarium and verticillium wilts, oak wilt, and dieback of birch, palm and walnut. You get both in Imisol. For a distributor near you, call J.J. Mauget Company at 626/444-1057 or 800/873-3779.

Dump body "for all seasons"

Henderson Manufacturing's combination spreader/dump body is designed to be a year around worker. Its "Munibody" design incorporates an ellipti-



cal side-to-floor profile for greater load capacity with a lower center of gravity. It has a built-in reversible conveyor system capable of moving material to the tailgate or forward to either side for spreading or shoulder work. This gives snow crews complete flexibility, and the body can also haul anything a standard dump body can, says the company which can be reached at 319/927-2828.

Henderson Manufacturing' spreader/dump body features reversible conveyor system to move material more efficiently.

Tree decay detector

The Arborsonic Decay Detector is a battery-powered instrument, weighing just three pounds that makes large-scale surveys and selection of trees on development sites easier and more accurate. It reveals decay not apparent from external inspections and eliminates the need for drilling. Contact American Arborist Supplies, Inc., West Chester, PA, at 800/441-8381.

Monitoring service vehicles

Lots of trucks to keep track of? Consider Teletrac, a land-based vehicle location and information system. Based in Kansas City, MO, Teletrac specializes in wireless remote fleet management and two-way data communications for commercial fleet management. The company says its services can improve your fleet management and speed customer service—for a price of course. Call 816/474-0055. **LM**



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The Turf Manager's Guide
to Insect Identification



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INSECT IDENTIFICATION GUIDE

INTRODUCTION:

Active insect pest infestations on managed turfgrass sites—from championship golf courses to low maintenance park lands—pose a persistent and difficult challenge to professional turf and grounds managers. Successful managers must combine a thorough working knowledge of the environment of their managed sites and the biology of the grass species with a



To accurately diagnose turfgrass damage, it is important to have a thorough understanding of multiple ways symptoms can be produced.

good understanding of insect pest distribution, insect life cycles, identification characteristics, site and plant symptomology, correct scouting techniques, and appropriate cultural and chemical control strategies. Given this daunting task, LANDSCAPE MANAGEMENT magazine and Mach 2 Turf Insecticide have produced this guide to managing a select number of turfgrass insect pests for use by professional turf and grounds managers. We believe that good turfgrass management, now and in the future, requires a combined and ongoing effort by all involved - managers, suppliers, and information providers. This LANDSCAPE MANAGEMENT guide provides photographs and descriptions of the most common Coleoptera and Lepidoptera pests including Japanese beetle grubs, sod webworms, cutworms, chafers, armyworms and many more.

Recognizing Insect Damage in Turf

Perhaps the most difficult task in correctly diagnosing damage caused by insect pest activity at

turfgrass sites is the process of differentiating site and plant symptoms produced by insects from those produced by either turfgrass diseases or abiotic causes (temperature and moisture extremes, site usage, or site management activities). Because many of the site and plant symptoms generated by non-insect activities closely resemble those caused by insects, the best way to make an accurate diagnosis of insect damage is to have a thorough understanding of the multiple ways these similar symptoms can be produced and how to use the keys for differentiating between them.

For managers with many long years of experience at one facility, the art of correctly diagnosing insect damage often comes as second nature, but to other managers who are often faced with multiple grass species at different sites under varying conditions, achieving a correct diagnosis is a matter of consistently applying a protocol designed to narrow down the possibilities.

This protocol will vary somewhat by site environment or region, species managed, management style, or site usage. The following five questions can help managers differentiate the causes of damage at turfgrass sites.

- 1) Do the symptoms have a regular or definable pattern, i.e., stripes, circles, tracks, etc.? If so, then look at mechanical activity, such as mowing, traffic, drainage, etc., as a possible cause.
- 2) Does the site show signs of animal activity or damage, such as birds feeding or turf torn up by skunks or raccoons? If so, then look for insect activity in the damaged areas.
- 3) Did the symptoms appear after a prolonged period of warm temperatures *and* high humidity? If so, then consider disease activity.
- 4) Does an examination of plants in affected areas not show any identifiable insect specimens or leaf, crown, or root lesions or disruptions? If this is the case, consider the sites' other management practices, such as misapplication of fertilizers or pesticides, as the possible cause.
- 5) Does examination of the affected plants show signs of feeding activity, such as damaged leaves, crowns, or roots or evidence of chewed plant material (frass) at the base of plants? If so, then, insects are the likely cause.