Bio-control research surges, new products abound

By ANDREW OVERBECK

While biological control products have gained a significant foot hold in the U.S. turfgrass market, the young industry continues to redefine itself with new products, technologies and techniques almost daily.

"When you are talking biologicals you are talking about the soil ecosystem which is a new frontier that we are learning more about every day," said Rick Geise, brand manager for Nature Safe. "We are just scratching the surface right now."

Universities and companies are conducting research to determine methods to improve microbial efficacy, sustain microbial populations, identify specific beneficial micro-organisms, lengthen the shelf-life of products and combine products with traditional chemical applications.

BIOSTIMULANTS

Through a variety of delivery mechanisms, activities and organisms, biostimulants, generally, encourage healthy turf growth, increased root mass and improve soil quality to help turf survive weather- and disease-related stress.

However, new research and products are showing that some biostimulants have disease-suppressive qualities as well.

New Products

For instance, Sybron Biochemical's TurfVigor microbial product line concentrates on feeding beneficial microbes in the soil to enable turf to fight disease more effectively by increasing the plant's ability to absorb nutrients and develop a larger root mass.

"It allows the plant to turn on 'defense' genes. By inputting precursors to certain phytohormones, we can allow the plant to choose to turn on the genes to protect itself," said Dr. Dave Drahos, research and development group leader at Sybron. "At an application rate of every two weeks, they will have a benefit at helping the plant at certain growing points in the season that allow the plant to do much better at laying down a more branched root system that will take heat stress more efficiently and be more resistant to diseases like dollar spot."

TurfVigor helps turfgrass fight disease and develop a larger root mass. Above, side-by-side plots demonstrate TurfVigor's effect on turfgrass, left, compared to untreated turfgrass, right.

Also new to the market is Plant Health Care's Colonize biostimulant that contains mycorrhizal fungi to stimulate the rapid colonization of turfgrass roots.

"Colonize stimulates what is already there," said President Wayne Wall. "There is often some mycorrhizal fungi on greens, but not enough to provide a benefit because it is constantly being suppressed."

According to Wall, research has shown that greens with an abundance of the fungi are much healthier, produce more chlorophyll, better absorb nutrients and are more resistant to drought.

Floratine Products Group's Floradox system includes various soil-, biological- and turf-related products that work together to enhance the activity of patho-

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Supers use biologicals with cautious optimism

By ANDREW OVERBECK

As regulations and local legislation concerning the use of chemicals and environmental pressures continue to haunt golf course superintendents, many are incorporating biological products into their maintenance regimes.

"In this business, you don't want to wait until you are forced to do anything," said Paul Reising, superintendent at Preswick Village Country Club in Highland, Mich., "because then there is no room to experiment. If your top two products are taken off the market you are screwed and your job is on the line and you have to try a product that you are not familiar with."

Reising has been using Eco Soil's BioJect system on fairways and tees and Floratine's Floradox system on greens and has met, so far, with success.

Reising used two-thirds less fungicide on tees and fairways last year and only applied fungicide once on 14 of his 18 greens.

"I am convinced that it works, and we will be going full tilt this year," he said. "But it has only been one year so I am still going to run some tests this year. It would take me a couple years to be fully convinced."

When it comes to biologicals, cautious optimism is the rule of the day.

"Try out a bunch," advised Dan Dinelli, superintendent at North Shore Country Club in Glenview, Ill. "You want to be comfortable with what the options are if you have to omit certain plant-protection products."

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Bio-control industry shaking growing pains

By ANDREW OVERBECK

Industry insiders predict that between 20 and 30 percent of chemical and fungicide revenues will shift towards biological alternatives in the next five to 10 years. Behind that growth are increasing government regulations, such as the Food Quality and Protection Act of 1996 (FQPA) that is restricting and eliminating chemicals in the marketplace; increased local legislation curtailing or reducing chemical use; and increased acceptance of biologicals by golf course superintendents.

Organophosphates used on turfgrass that are under FQPA review

- ACEPHATE
- AZINPHOS-METHYL
- BENSULIDE
- CHLORPYRIFOS
- DISULFOTON
- ETHOPROP
- FENAMIPHOS
- TRICHLORFON

For example, Soil Technologies is poised to gain some market share with the introduction of its bioinsecticide Nemastroy, which recently received Environmental Protection Agency (EPA) approval.

"Nemacure, which is the most active material in the marketplace for nematodes on turf, is going to either be eliminated or restricted. Alternatives like ours have a real opportunity," said Steve Nicols, president of Soil Technologies.

While the future looks bright for biological manufacturers, the same factors that are driving the market's growth are also limiting it in the short term.

First, the industry's image has been sullied by companies marketing "snake oil" and making broad claims about product capabilities that don't exist. Further, an education gap exists between superintendents and the knowledge base of university and industry researchers.

The lack of an independent regulatory body to verify claims about biological control products has many in the indus-

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Communities that have moved to either ban or phase out pesticides use on city- or county-owned property

- ALBANY, N.Y.
- ARCATA, CALIF.
- BUFFALO, N.Y.
- CARRBORO, N.C.
- MARIN COUNTY, CALIF.
- MONROE COUNTY, N.Y.
- SAN FRANCISCO, CALIF.
- SANTA CRUZ, CALIF.
- SANTE FE, N.M.
- SANTA MONICA, CALIF.
- SEATTLE, WASH.
- SUFFOLK COUNTY, N.Y.

These wasps don't sting, they paralyze ... grubs that is

By ANDREW OVERBECK

LEXINGTON, Ky. — If Dr. Dan Potter gets his way, greens committee chairmen may soon find themselves approving the purchase of wasps to fight pests on their golf courses. While this may raise safety concerns among golfers, the Tiphia wasp is not concerned with human prey, but instead hones in on masked chafer grubs (white grubs) that damage turfgrass.

"These are innocuous parasitic wasps. No one would notice these things," said Potter, professor in the Department of Entomology at the University of Kentucky. "They go down into the soil and seek out the grubs,

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After seeking out a masked chafer grub, the Tiphia wasp paralyzes its victim, rolls it up into a ball and lays an egg on it. When the egg hatches the wasp larva then begins to feed on the grub...

...One week later, the Tiphia wasp larva has polished off the masked chafer grub leaving behind only its head and skin. An effective form of pest control indeed!

Education, research key to maintaining growth

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try concerned.

"The fact that there is not a regulatory body that has an independent voice to lends itself to claims being made by companies and products that really don't do what they say they are going to do," said Max Gelwix president and chief operating officer of Eco Soil. "Unfortunately, a failure by one company translates to us and we get colored by that failure. However, no one wants an over-regulated industry, either."

Many point to self-regulation as the way to weed out the dishonest companies.

"There are always good products and bad products," said Clare Reinbergen, president of Growth Products. "My experience is that the products that can't stand up to it fall by the wayside. When a customer expects something and they don't get it, they aren't going to go back and buy more."

Reinbergen also insists that EPA registration and the necessary university testing functions as a form of regulation.

"To get full registration by the EPA and get the test data to back up product claims costs thousands of dollars. A lot of companies are not willing to spend the money," she said.

Therefore, companies stress the importance of publishing independent university research data and using it to educate superintendents.

"Education is the single biggest guard against deceptive marketing," said Rick Geise, brand manager for Nature Safe.

Indeed, without data and university studies to back them up, many superintendents won't even consider using the products.

"We went out to the Links at Spanish Bay to talk to the superintendent there," said Reinbergen, "and the first thing he said was 'If you don't have test data I won't talk to you about a biological.' "

As a result, companies have been holding regular seminars for distributors and superintendents to educate them on biological controls.

Plant Health Care holds six seminars a year on below-ground ecology at its training facility in Beaufort, S.C.

"We take a step back and understand physiology and biology and chemistry of the soil," said Wayne Wall, president of Plant Health Care.

Eco Soil has also found training seminars to be effective. "We held seminars all around the country this winter dealing with education issues. It may be a slow method of getting the word out, but it is more effective in terms of delivering information as opposed to sending out written documents," said Gelwix.

In addition to education efforts and university research that confirms a product's claims, two companies are working with DNA fingerprinting to improve quality control and assurance of its products.

Dr. Dave Drahos

"We have been adapting pharmaceutical product-control testing standards for biological markets," said Wall. "We can now do DNA testing so that we are no longer subjective with respect to what organisms are in the product and how much."

This leads to definitive evidence that microbes get to the root and are active.

"We can track these microbes on the root and demonstrate that they are there, qualitatively and very accurately," said Dr. Dave Drahos of Sybron Biochemical. "But we can also show the superintendent that these microbes have been isolated back off a root system and because of the power of DNA fingerprinting we know that they are the right strains."