

By ANDREW OVERBECK

While biological control products have gained a significant foothold in the U.S. turfgrass market, the young industry continues to re-define 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.

Bio-control research surges, new products abound

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



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.

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."

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 chemi-

cals in the marketplace; increased local legislation curtailing or reducing chemical use; and increased acceptance of biologicals by golf course superintendents.

For example, Soil Technologies is poised to gain some market share with the introduction of its bioinsecticide Nemastry, 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

Organophosphates used on turfgrass that are under FQPA review

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

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...

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.

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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...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!

Supers try out biologicals

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Dinelli also suggested studying university research results and what organisms are involved. Even then there are risks involved.

"There are often inconsistencies. What worked for one university might not work for my course and vice versa," he said.

However, using university research data gives superintendents a baseline of what to expect with product performance.

Scott Niven, superintendent at Stanwich Club in Greenwich, Conn., used research as a guide when instituting the use of Companion in his turf management program.

"I took my cues from Dr. Bruce Clark at Rutgers, who had been using it for three years," said Niven. "He was able to reduce his fungicide by half and I took that information and reduced my program by one-third and got good control. He demonstrated how much I could reduce fungicide use and still be safe."

This year Niven is building Companion into his program and making it pay for itself by reducing rates.

By using a wide variety of biological controls and strong cultural practices, Dinelli has also reduced chemical use by an average of 30 percent.

"I can't say for sure that it has been biologicals," he said. "Every year we massage our plans and get better at what we do, so there are a lot of cultural things that we wind up implementing as far as aerification tools and management. The biologicals need to be a part of the overall program, but it is not a stand-alone."

"The whole approach has to be combined with other cultural practices to take you to the next level ... but every now and

then you get smacked down to the first level and you have to use a fungicide."

Since biologicals are not fail-safe and require constant monitoring, many superintendents are not thrilled about using them, said Reising.

"Some guys say that with aeration, cultural practices, feeding and nutrition, you don't need fungicide," he said. "But how do you tell that to a guy who just lost a green or fairway and his job is on the line because he didn't spray a fungicide?"

"This is a dynamic new science and there are more questions than answers," said Dinelli.

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