CHALKBOARD

TIPS FROM THE PROS

BIOSTIMULANTS BENEFIT TURF MANAGEMENT

Biostimulants can have a significant and beneficial effect on turfgrass when combined with sound management practices, according to research underway at several U.S. universities. Ongoing studies indicate that these compounds improve root growth, provide better resistance to certain stresses, and possibly reduce nitrogen rates due to improved fertilizer efficiency.

As their name would imply, biostimulants are products which improve and accelerate plant growth. Some are completely natural, with no added chemicals or hormones. Others contain synthetic hormones, chemicals, and other ingredients.

A number of turf managers are now using these products to protect new plantings and for faster establishment of sod installation and overseeding. They reduce loss due to transplant shock and environmental stress.

Dr. R.E. Schmidt, professor of agronomy and a turf ecology and physiology specialist at Virginia Polytechnic Institute, Blacksburg, VA, says research indicates that biostimulant compounds work consistently well in a number of applications, particularly sod production. "We know we can stimulate growth, especially of roots, with some of these materials," he explains. "We also get tillering and initiating of buds."

Based on experiments with bluegrass, bentgrass, and tall fescue, Schmidt believes that biostimulants can be used to speed up production and transplanting of sod by enabling roots to knit more quickly into the soil. He says it might be possible for roots to become established in a week, as opposed to the usual two or three.

"This would reduce irrigation necessity, because water would not be as critical for as long after transplanting," Schmidt explains. "For sod producers in areas dependent solely on rainfall, this benefit would be particularly useful."

The turf specialist adds that production of bentgrass sod for putting greens is increasing in the U.S. He reports that there is an increasing demand on sod producers to treat these products with biostimulants *before* shipping to this market. "Some golf courses are now able to sod their greens and have them putted on in a few weeks' time when biostimulants are used," says Schmidt.

A biostimulant compound he is currently examining contains different formulations of humic acids derived from peat moss, kelp extracts, micronutrients, coenzymes, chelating agents, and other natural soil chemicals. This formulation is sold under the trade name of Roots Root Growth Enhancer.

At rates ranging from a one- to two-percent solution, the product can be applied during seeding, after germination in the two-leaf stage, or in general applications three or four times a year at four- to six-week intervals. It can be mixed with liquid fertilizers and herbicides.

Because Virginia Tech is located in a transition zone, its researchers are studying both warm- and cool-season grasses. Applications of biostimulants and iron, for example, are being investigated on bermudagrass. According to Schmidt, this combination seems to help fight cold stress.

"We're at an elevation of 2,100 feet, and many times our bermudagrass plots are seriously affected by the cold," he explains. "Last October, bermudagrass treated with a biostimulant and iron stayed green after several frosts. There was no comparison between the bermuda that was treated and the bermuda that wasn't. The untreated turf succumbed to the frost."

Schmidt says that helping turf hold up to chilling temperatures is perhaps the greatest benefit of applying a biostimulant in combination with iron. "The correlation in survivability of turf is pretty high where iron and biostimulant are applied in tandem," he stresses.

Widespread use of biostimulant compounds may someday help turf managers cope with the problems of groundwater contamination, particularly from nitrates. "We're talking about biostimulant application rates measured in grams as opposed to hundreds of pounds of fertilizer," says Schmidt.

However, he is quick to point out that biostimulants would never be substituted for an essential plant nutrient such as nitrogen. "It's conceivable that you'd use the two together and cut the nitrogen rates, because nitrogen efficiency would be greatly increased," he explains.

Dr. Michael Goatley, assistant professor at Mississippi State University in Starkville, is also researching the effectiveness of biostimulants on warm-season grasses such as bermudagrass, St. Augustine, and zoysiagrass.

"With warm-season grasses, we see most response to biostimulants under stress conditions," Goatley says. "The most measurable response of turf grown under suitable moisture and fertility conditions occurs when biostimulant is applied in late September or early October, when turf begins to prepare for winter dormancy."

In this situation, Goatley is seeing more enhanced root development late in the growing season. This could result in better carbohydrate storage and preparation of plants for winter. There is also evidence that biostimulants could enhance spring green-up as temperatures warm and spring dormancy breaks.

According to Goatley, turf managers, especially in the South, can get into trouble in the spring with early, heavy nitrogen applications designed to stimulate growth and green the turf. "The lush growth of turf following early-season nitrogen application is very susceptible to injury from late frosts," he explains. "If a frost occurs, the turf will again have to expend a lot of stored energy reserves toward development of a new canopy."

While the detrimental effects of an insufficient root system might not be initially apparent, Goatley warns that turf will be more susceptible to moisture and heat stress during the summer months.

Both Goatley and Schmidt stress that many unanswered questions remain concerning biostimulants and where these compounds might fit best in commercial situations. Future research will be focused in this direction.