

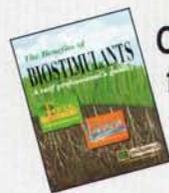
Biosstimulant Basics for Sports Turf Managers



Top Conditioning For Hi-Spec Turf...

Focus® Turf Biostimulant provides the reinforcement and recovery needed to prevent and overcome the challenges created by excessive traffic, intensive mowing and the leaching of nutrients from high sand-content soils — plus the usual environmental stresses of insect infestations, diseases, temperature extremes and drought.

Focus enhances the uptake and utilization of existing nutrients through both soil activity and an increase in plant metabolism, significantly increasing root mass and stress tolerance.



Call for
free brochure
1-800-821-7925
www.pbigordon.com

G pbi/GORDON
CORPORATION
An Employee-Owned Company

© 2000, PBI/GORDON CORPORATION.
Focus is a trademark of PBI/Gordon Corporation.
4/2000

Circle 118 on Inquiry Card

A number of biostimulant products have been introduced in the past decade, some with claims which can seem beyond the realm of credence. Yet increasing numbers of turf managers have come to rely on these products as a standard component of their turf program.

Just what are biostimulants? And what can the sports turf manager expect from biostimulant product applications on his playing fields?

The term biostimulant has been used to describe various substances involved in turf and horticultural production. However, the definition for the term which has become generally agreed upon defines **biostimulant** as any material that is neither a fertilizer nor pesticide, but which when applied to a plant will enhance the health and growth of the plant.

A biostimulant may increase metabolism, increase chlorophyll efficiency and production, increase antioxidant production, enhance nutrient availability, speed up germination and cell development, or increase the water holding capacity of plant cells, or even the soil.

Biostimulant materials include natural plant hormones, including cytokinins, auxins and gibberellins, as well as humic and fulvic acids, microorganisms, proteins, amino acids and vitamins.

Most currently marketed biostimulant products contain plant hormones extracted from kelp, as well as humic acids and sometimes fulvic acids. Many manufacturers also add amino acids and even vitamins.

Cytokinins extracted from kelp or kelp containing cytokinins are a popular biostimulant component. Cytokinins are produced in the roots of all plants and enable plant cell differentiation and division. Cytokinins are involved in delaying senescence and repressing apical dominance. Auxins provide similar benefits.

Cold water kelp produces an abundance of cytokinins, making it the source of choice for this important biostimulant component. Adding a product containing concentrations of cytokinins to a turf management program can enhance seed germination and seedling establishment, as well as promoting an increase in root mass when applied to established plants.

Humic acids affect the soil in a number of ways. Humic acid is characterized by a very large molecule containing a highly active charge. This charge can bond nutrient ions, preventing leaching of soil nutrients. They also increase the nutrient and water holding capacity of soils, as well as increasing the availability of micro-nutrients, phosphate and potash, providing a more effective growing environment for turf grasses.

Fulvic acids are not always included in biostimulant products. Derived from humic substances, fulvic acids have been shown to be powerful chelators of organic electrolytes, transforming minerals and making them readily available for plant absorption. Fulvic acids have more internal activity in plants than humic acids. They enhance nutrient, vitamin, coenzyme, auxin, hormone and natural antibiotic availability. Fulvic acids also increase enzymes and metabolic activity, contributing significantly to healthy plant growth.



Checking root mass is the best measure of biostimulant program success.

So when and where can the sports turf manager use biostimulants to his best advantage?

Biostimulants should be considered as secondary products in a good turf management program. Proper fertility is primary, starting with soil testing and following through to assure that nutrient requirements are met. When nutrient levels are adequate, applications of biostimulants can further enhance health and vigor.

When plants are not stressed, natural hormones are produced in sufficient amounts to sustain healthy growth. However, plants are frequently under stress due to heat, drought, weak soils, disease, low mowing, excessive traffic and other less-than-optimum conditions. Under such conditions the external application of biostimulant materials can enable the plant to resist or to recuperate from excessive stress.

Turf managers need to determine their objectives in order to determine what biostimulant components are required and when they can best be utilized in the management program.

The timing of the biostimulant application affects the results achieved. The natural growth cycle of the turf is an important consideration. Applying a biostimulant to improve the natural growth of the turf usually requires

different timing than an application to solve a problem.

Applications intended to solve problems, must take into consideration the cause of the problem. If the problem is a natural stress which can be anticipated, such as summer drought or excessive heat and humidity, optimum results are obtained with applications made prior to the occurrence of the stress. Turf growing in shade, for instance, can be assisted by a biostimulant application to enhance chlorophyll production under low light conditions.

Specific cultural practices can also be augmented with biostimulant applications. Aeration, for instance, can be enhanced as can seeding, sodding and sprigging.

The use of biostimulants when seeding can provide a variety of benefits. Germination times can be reduced. Natural plant hormones also affect speed of establishment and coverage. Biostimulant applications have been shown to increase root mass for quicker sod knitdown and sprig development.

Root mass correlates with the turf's ability to resist and recover from environmental stresses. Core samples can provide the turf manager with assurance that his turf is ready to withstand the many pressures to which it is subjected during the growing season. Where good agronomic basics are in place, biostimulants can take your turf to new levels of beauty and durability.



Quick Grow-In, Sod, Sprigs, Seeds...

New Launch® Biostimulant provides cytokinins and auxins from cold water kelp extract along with humic and fulvic acids known to enhance root mass and length. These components are blended in a deodorized dairy manure slurry base which nourishes soil microbes and dramatically increases their populations.

These components work together both in the plant and the soil to generate a strong root mass and dense, hard-wearing turf. Launch is ideally suited for the establishment of new turf, whether, seeding, sodding or sprigging.



Call for free brochure
1-800-821-7925
www.pbigordon.com



© 2000, PBI/GORDON CORPORATION.
Launch is a trademark of PBI/Gordon Corporation.
4/2000

continued from page 31

scratching the surface to 16 or more inches, select equipment that can penetrate to where the problem is located.

Is it important to remove soil? Soil removal may be important if you want to modify the existing root zone over time by replacing removed soil with a sand or other soil mix that will provide benefits of drainage and air exchange. Core cultivation also may be desired if the cores are simply redistributed into the turf, becoming an important (sometimes the only

available!) form of topdressing. If soil replacement or core material topdressing is not a goal, cultivation tech-

niques that do not remove soil (deep-tine cultivation with solid tines, water-injection, vibratory plows) can accomplish much.

Will cultivation be followed by topdressing? When the goal is to modify a root zone by replacing it, over time, with a different soil, then the soil must be opened adequately to receive the topdressing soil. Topdressing can follow either hollow- or solid-tine cultivation. Hopefully the topdressing soil (type, availability) has been carefully considered and an effective topdressing program (amount, frequency) has been developed to avoid the formation of layering in the turf system.

When Uniform Turf Conditions Really Matter

Aquatrols Soil Surfactants
Are The Perfect Catch!



- Establish Uniform Moisture in Turf



- Treat Localized Dry Spots, Improve Infiltration & Drainage



- Improve The Penetration of Water & Chemicals



5 North Olney Avenue
Cherry Hill, NJ 08003 USA
800-257-7797
856-751-0309
856-751-3859 FAX
www.aquatrols.com

Other Quality Products
from Aquatrols



Occasional deeper cultivation can reduce or eliminate the deeper compaction layer and allow the continued use of the older cultivation method.

Will overseeding follow cultivation? The benefits of overseeding following cultivation will occur only with cultivation methods that are relatively shallow and which open the soil surface adequately enough to allow seeds to fall into soil contact.

How long will the cultivation effect last? The effects of deep-tine cultivation can last for a couple of growing seasons, so this cultivation technique—though potentially expensive—may not be required every year. Conversely, the effects of slicing may not be long-lived, but can accomplish a goal of improving short-term water infiltration. The effects of conventional hollow-tine cultivation are lengthened if the proper topdressing soil is used to fill the empty holes. When equipment must be rented or borrowed, consider how long the cultivation effect will last. It may be worth the time and effort to use an expensive piece of equipment if the results of use will be long-lived.

How much surface disruption can be tolerated? In a sports turf situation, certain cultivation techniques may be inappropriate because of the

Circle 119 on Inquiry Card

amount of surface disruption that is caused. If traction, surface uniformity and aesthetics will be compromised before an important field event, it is best to delay cultivation (at least with that method) until a later time. Recovery time to regain field playability must be factored into the selection of the cultivation method.

How frequently must this cultivation technique be used? Certain cultivation techniques (slicing, spiking) must be used fairly frequently to realize significant benefits. Methods that loosen the soil from below (deep-tine and vibratory "plows") need not be used annually, except where severe soil problems exist. Consider equipment availability, equipment purchase vs. lease costs, availability of labor to perform certain kinds of cultivation and whether adequate windows of opportunity exist to use the desired cultivation method.

Will this cultivation technique make things any better—or any worse? If a compaction layer exists 3-4 inches deep in the soil profile, the result of long-term cultivation with the same cultivation method, then continued cultivation to the same depth will not correct the problem—and may cause it to become worse. Occasional deeper cultivation can reduce or eliminate the deeper compaction layer and allow the continued use of the older cultivation method.

Cultivate at the Proper Soil Moisture

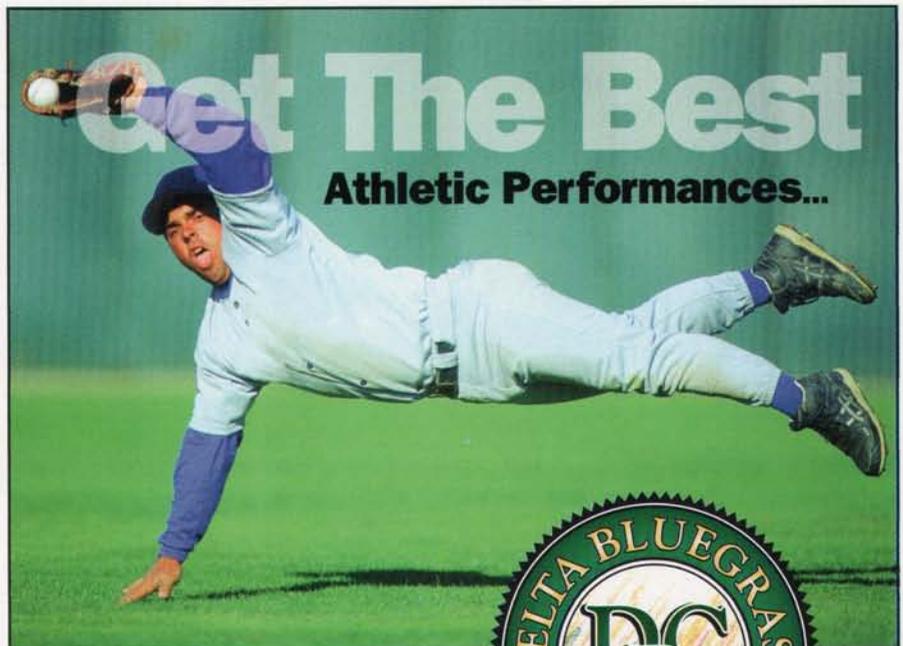
Most cultivation methods achieve maximum effectiveness when performed at or near field capacity, which is generally reached by irrigating deeply one to two days prior to cultivation. These methods would include "conventional" vertical core cultivation, cultivation with drum-type equipment, equipment using spoon-type tines, slicing and when using high-pressure water injection. Any method that uses solid tines should be performed at soil moisture levels that are drier than field capacity, which might occur (on a heavy soil) two to four days following heavy irrigation or rainfall. This would include deep-tine cultivation, shatter-core and other solid-tine methods, the use of Aerway-type equipment and sub-aerification methods (vibratory plow types of equipment). These latter methods loosen soil by shattering or vibrating, rather than by removing soil; they are most effective when soil is on the drier side.

With any cultivation method, soil that is overly dry will not allow sufficient penetration. Conversely,

very wet soil is not loosened effectively or will not allow cores to be pulled. In both cases, cultivation efforts will be largely ineffective.

Evaluate Your Cultivation Program

Cultivation (and all components of the overall management program) should be evaluated annually for effectiveness. Is it accomplishing your goals? Is it cost effective? How does it impact other aspects of your turf management program? Perhaps the most important question to ask: Does my cultivation program improve the safety and playability of my sports turf surfaces?



**...When You
Install The Best
Performing Turf!**



DELTA BLUEGRASS' SPECIALTY BLENDS FOR SPORTS FIELDS

*are grown on a sand base
to meet the strict criteria
for many individual
installations.*

*Call for information
about your specific needs
and field renovation
services.*

P.O. Box 307, Stockton, CA 95201 • (800) 637-8873 or (209) 469-7979

CONTRACTOR'S LICENSE # C-27 752734