

BBC LABORATORIES

BBC Laboratories

AGRICULTURAL & ENVIRONMENTAL MICROBIOLOGICAL SERVICES

BBC Laboratories has been a leader in providing quality innovative environmental microbiological research and product testing since 1991. Some areas of specialization include bio analysis of soils, composts, compost teas and other soil amendments. Bioassays are also done for determining microbial disease inhibition in soils as well as some bioremediation analysis.

Soil Microbial Analysis:

In soil bio analysis there are Six Functional Groups. Each of the groups are analyzed for both concentration and diversity. These functional groups are evaluated for agricultural soils, turf, and biological products. The groups include:

- Heterotrophic Bacteria (Aerobic)
- Anaerobic Bacteria (including facultative anaerobes)
- Yeasts and Molds (Fungi)
- Actinomycetes
- Pseudomonades
- Nitrogen-Fixing Bacteria (Free living)

Additional analysis can be done for other microbial groups of microorganisms including mycorrhizae fungi and cellular degraders. BBC Labs has the ability to do a wide range of e-coli and salmonella testing required for organic produce growers. Call them for any special requirements you may have or visit their website at www.bbclabs.com

BioGenerator, LLC



The Global Organics Group takes pleasure in announcing the acquisition of Martin BioChem, Inc. of Snowflake, Arizona. The purchase of all assets, formulations, technology, and trade secrets was completed in January 2009. The company has been branded Bio-Generator, LLC and its headquarters moved inside the Global Organics Group facility in Goodyear, Arizona where it will operate as a division within Global's plant nutrient area.

Roger Blotsky, Global's Founder, announced that Ken Martin will remain with the Global Organics Group as Vice President of BioGenerator, LLC and lead its efforts to expand its market in plant nutrient through this innovative system.

The Global Organics Group has more than 42 years of continuous service to agriculture through its BioFlora line of plant nutrients. BioFlora is a world leader in Certified Organic plant nutrients, with customers in 21 states, as well as 14 foreign countries on 6 continents. In 2008, BioFlora shipped almost 50% of its product outside the US, and continues to expand both domestically and internationally as world agriculture producers seek more sustainable and efficient means of growing plants.

BioGenerator, LLC joins BioKool, LLC, Green Acres Farm, LLC, BBC Labs, LLC, and Integrated Organic Energy, LLC as operating divisions of the Global Organics Group, and shares the tradition of innovation and implementation. Global's continued mission as an applied life sciences organization have lead to development of products for use as major components in human nutrition, pharmaceuticals, cosmetics, nutraceuticals, animal nutrition, laboratory procedures, biomass utilization for production of energy and bio-fuels, and in bio-conversion of hazardous waste material into useable materials. Key patents in each of these areas attest to the leadership and imagination of the Global Organics Group and the spirit of innovation encouraged in its employees and owners.



Global Organics Group invites inquiries through its distributors, its employees, and its website, www.globalorganicsgroup.com or by calling (623) 932-1522

gogreenbiogenerator.com

Agronomic News

Earthworms Deliver Major Benefits in Plant Disease Suppression

Organic farmers have understood for years that the density of earthworms is one of the most reliable indicators of soil health, but they have not known why. Research carried out at the Connecticut Agricultural Experiment Station has provided compelling evidence that the humble earthworm plays a significant role in suppressing several common soil-borne plant pathogens.

A greenhouse study was carried out with asparagus, eggplant, and tomatoes grown in pots infected with common *Fusarium* and *Verticillium* species known to cause serious plant diseases in these crops. In the pots that also contained earthworms, plant weights increased 60% to 80%, and estimates of disease severity declined 50% to 70%.



Source: Wade H. Elmer,
“Influence of Earthworm Activity
on Soil Microbes and Soilborne
Diseases of Vegetables,” *Plant
Disease*, Vol. 93: 175-179, Febru-
ary 2009

The author, Wade Elmer, speculates that the disease-suppressive benefits of earthworms are brought about by their impact on soil microbiological activity, and that “...strategies to increase earthworm densities in soil should suppress soil-borne diseases.”

One of the major benefits of using BioFlora Humega™ as a preplant soil amendment is that it contains a large diversity of microbial enzymes and carbon that stimulates microbial growth in the soils. Pathogen inhibition studies have found that the activities of these microbes are one of the key components to suppressing a great variety of soil-borne diseases.



BioFlora
Ag Sales team
at the 2009
Tulare Ag
Show.

“SOIL CARBON IS THE KEY TO SOIL FERTILITY”

Carbon is the main or basic element of all living things and the study of it is called Organic Chemistry. Since plants are made mainly of carbon compounds, it is important to know how they obtain their carbon. We know from our early science classes that animals exhale carbon dioxide (CO₂) and plants inhale carbon dioxide through the pores or stomata on the underside of the leaves. Through a process of photosynthesis the plants take in sunlight and water and this carbon dioxide and produce sugars and cell promoting compounds that create new growth in the plant.

The question now is where does this carbon dioxide come from? Since carbon dioxide is only three hundredths of one percent (0.03%) of the atmosphere around us, we know that plants cannot obtain the carbon dioxide they need from the atmosphere, therefore it has to come mostly from the soil. Organic materials in the soil such as crop residues, composts, dead roots and sequestered carbon compounds are the main sources of soil carbon. These organic compounds are what gives the soil its dark, rich color and is a major sign of soil fertility.



Source: Rodale Institute, Emmaus, Pennsylvania

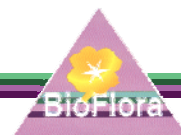
Plants cannot take up this soil carbon by themselves, Nature uses billions of soil animals or microbes to process this organic material into carbon dioxide and other mineral compounds in a process called mineralization. This process releases the soil carbon in the form of carbon dioxide, which the plant leaves then capture as it escapes from the soil. It is a whole cycle created by Nature to recycle plant materials in order to create new growth. This is referred to as the Carbon Cycle.

BioFlora Humega™ Builds Soil Carbon:

The BioFlora Division of Global Organics Group is committed to rebuilding soil fertility by focusing on adding carbon and soil microbes back into the ground. Humega™ is a liquid, bio-activated soil carbon product that should be part of every farmer’s fertility program. Whenever soils are being irrigated or whenever growers are adding chemical or organic fertilizers to their soils, they should be adding some carbon back into the soil. BioFlora Humega™ should be included with every fertilizer program. The rich carbon product contains a high diversity of millions of microbes and enzymes that are essential to plant health and soil fertility.

<u>Soil Functional Group</u>	<u>Ideal CFUs per gdw</u>	<u>Humega™ CFUs per liter*</u>
Heterotrophic Bacteria	10 million to 1 billion	620 million
Anaerobic Bacteria	1 to 10 million	4 million
Yeasts and Molds	500 K to 5 million	1.3 million
Actinomycetes	100 K to 1 million	100 thousand
Pseudomonads	1000 to 1 million	1 million
Nitrogen Fixing Bacteria	1 million	1 million

Source: BBC Labs, Tempe Arizona



Company News Briefs

We're on the Web!
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Gloria R. Ramirez, the Managing Director of BBC Laboratories is committed to provide the highest level of environmental laboratory services. She has been with BBC Laboratories since 2003 and will be more than happy to assist with and of your questions in either English or Spanish. Gloria holds a Microbiology degree from Arizona State University.

Derex Zellars, has joined the Global Organics Group as a chemical analyst and researcher working with all divisions of the company in agriculture, energy and mineral development. He graduated from University of Texas at San Antonio with a degree in Environmental Science and will be focused on getting the company compliant with ISO 9000 certification this next year.

Perry O. Gooch, has, after four years, finally completed his studies and received his Doctor of Philosophy degree in Environmental Agroecology to become another of our resident "doctors" to be added to the list which starts with the head of our Animal Science Division, Dr. Larry Metheny, Doctor of Veterinary Medicine (DVM).

Steve Pavich, has joined the BioFlora Agriculture Division as the California Regional Sales Manager. Steve has been in the organic movement for over 30+ years. He is one of the founding members of many of the first organic organizations in this country. His family, Pavich Farms, specialized in producing high quality organic table grapes on over 5,000 acres in both California and Arizona. Steve has a great deal of knowledge and is very familiar with organic and sustainable growing programs, having personally pioneered many of the current programs now in use in this industry. BioFlora is very honored to have him as an important part of our management team. Steve will be

About BioFlora®

The BioFlora mission has been and continues to be environmental sustainability. Sustainability of soil and water through judicious inputs of biorganic™ materials allows mankind to option, for future generations, a global environmental stewardship. The health of the world can be no better than the health of the environment.



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